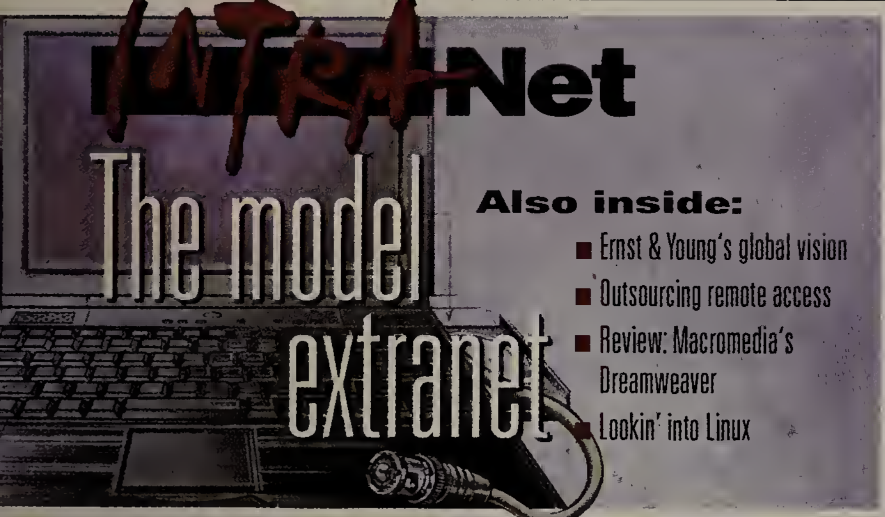
MARCH 30, 1998 VOLUME 15, NUMBER 13

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

DEBUT: COOL TOOLS

Test Center Director Lee Schlesinger offers his take on high-tech gadgets. Page 50.



IntraNet

The model extranet

Also inside:

- Ernst & Young's global vision
- Outsourcing remote access
- Review: Macromedia's Dreamweaver
- Lookin' into Linux

Four days in spam hell

Canadian ISP executive recounts frustrating and costly experience of being victimized by a mysterious spammer.

By Paul McNamara
Toronto

Ray King's nightmarish tale of a four-day fight with a run-amok spammer could have been penned by Stephen King.

Spamming victim
Ray King

As president of ShockMedia, a small Toronto-based Web development company and Internet service provider, King emerged from the battle hopping mad and eager to enlist in the growing army of antispam activists. King contacted the FBI and the Royal Canadian Mounted Police. In addition, King sent the spammer's Florida ISP, which he claims did virtually nothing to stop the assault, an attention-grabbing bill for $225,000.

What follows is taken from an interview with King and excerpts from an account of the incident posted by King at www.infoweb.com.

Thursday, March 5

"We figure the spamming started about noon [after] our servers started being hit with a tremendous amount of stress," King said. Someone who identified

See **Spam hell,** *page 10*

Building PCs the Microsoft way

By Doug Barney
Orlando

Microsoft Corp. last week told 3,000 hardware engineers how to build PCs the Microsoft way, a plan that could make just about all the desktop machines in your shop obsolete.

If the engineers accept the PC design guidelines handed out by Microsoft here at the Windows Hardware Engineering Conference 98 (WinHEC 98), PCs will be dramatically different in a few years.

Want to see a movie, watch TV or listen to music? Forget

See **Microsoft,** *page 62*

NEWSPAPER $5.00

Novell strengthens Java server story

By Christine Burns and Paul McNamara
Salt Lake City

Novell, Inc. last week attempted to back up its claims that NetWare is the ultimate server platform for Java applications.

Although the company used its BrainShare '98 customer conference to announce a 64-bit edition of NetWare, Novell Directory Services (NDS) for NT and GroupWise 5.5, the main message was that developers and users should look to Novell for all their Java needs. Novell tried to hammer this point home by unveiling independent test results showing that server-side Java applications run twice as fast on NetWare 5 beta code as they do on Windows NT 4.0.

Novell officials at Sun Microsystems, Inc.'s JavaOne conference in San Francisco last week also got into the act by talking up a set of applets that will bolster distributed Java applications running on NetWare servers. The applets will link Java applications to transaction processing monitors, message queuing software and other tools designed to keep enterprise applications up and running.

More BrainShare '98 coverage. Pages 22, 64 and 65.

Novell CEO Eric Schmidt said

See Novell, *page 64*

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Get more online:

- Audio and video rebroadcasts of BrainShare '98 keynotes
- Our continuing online forum about the future of Novell

FIND IT ON FUSION 6439

Sun aims Java at enterprise

By Chris Nerney and Andy Eddy
San Francisco

Sun Microsystems, Inc. last week unveiled a slew of products to energize the development of Java enterprise applications. The effort is an attempt to fortify Sun's position against Microsoft Corp. and other companies that are developing their own versions of Java.

Sun blanketed its annual JavaOne conference with more than a half-dozen product announcements, including the

See **Sun,** *page 12*

High-tech hospitality

Book a room at one of the enterprising hotels touting high-speed Internet access.

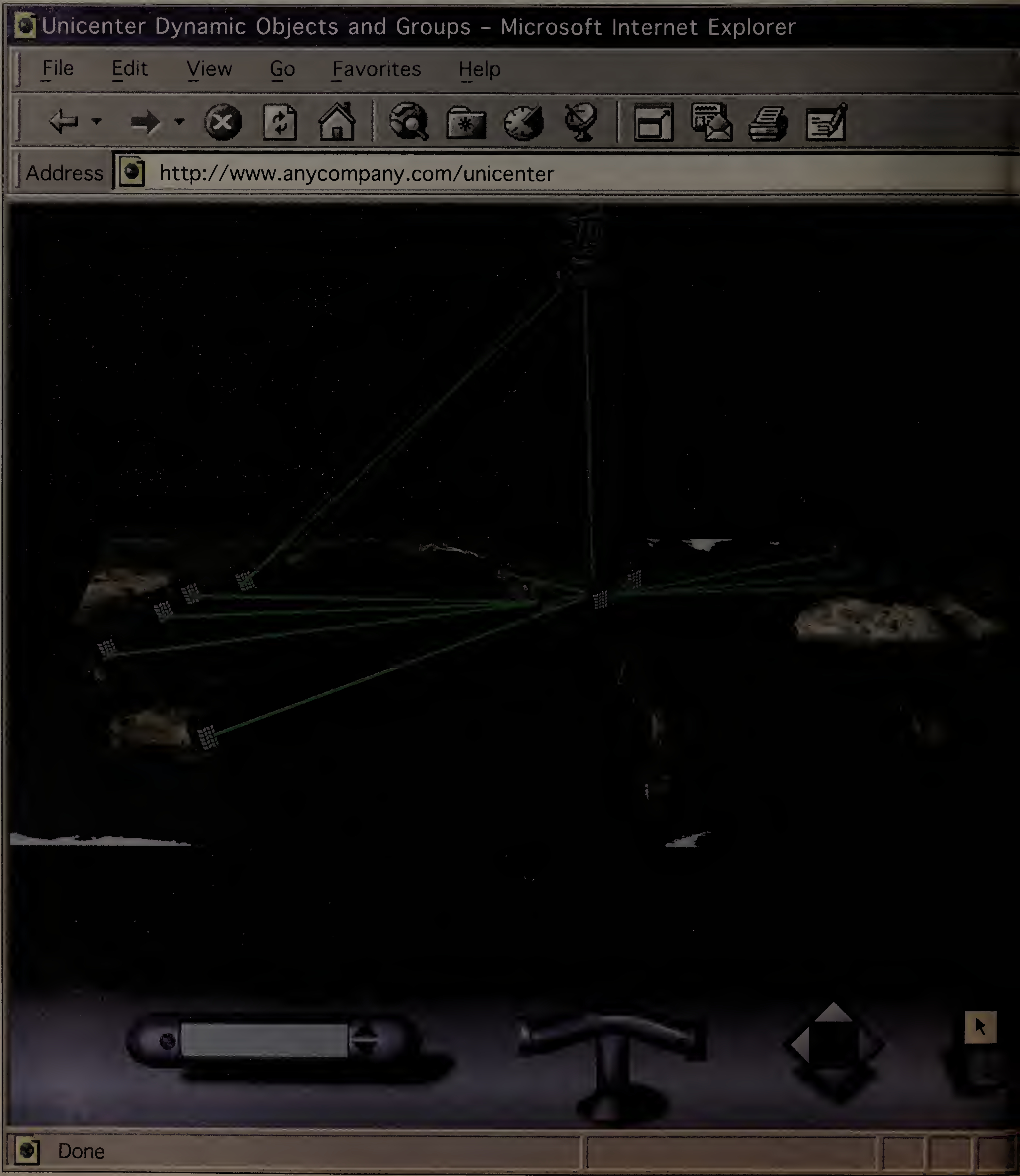
By Susan Breidenbach

Embattled road warriors, take heart: Hotels are beginning to bring high-speed connectivity services one step closer to reality.

With help from Microsoft Corp. and assorted network, cable TV and service providers, the hospitality industry is trying to make it easy for guests to connect to their corporate networks back home.

See High-tech hospitality, ***page 43***

Now You Can Manage Th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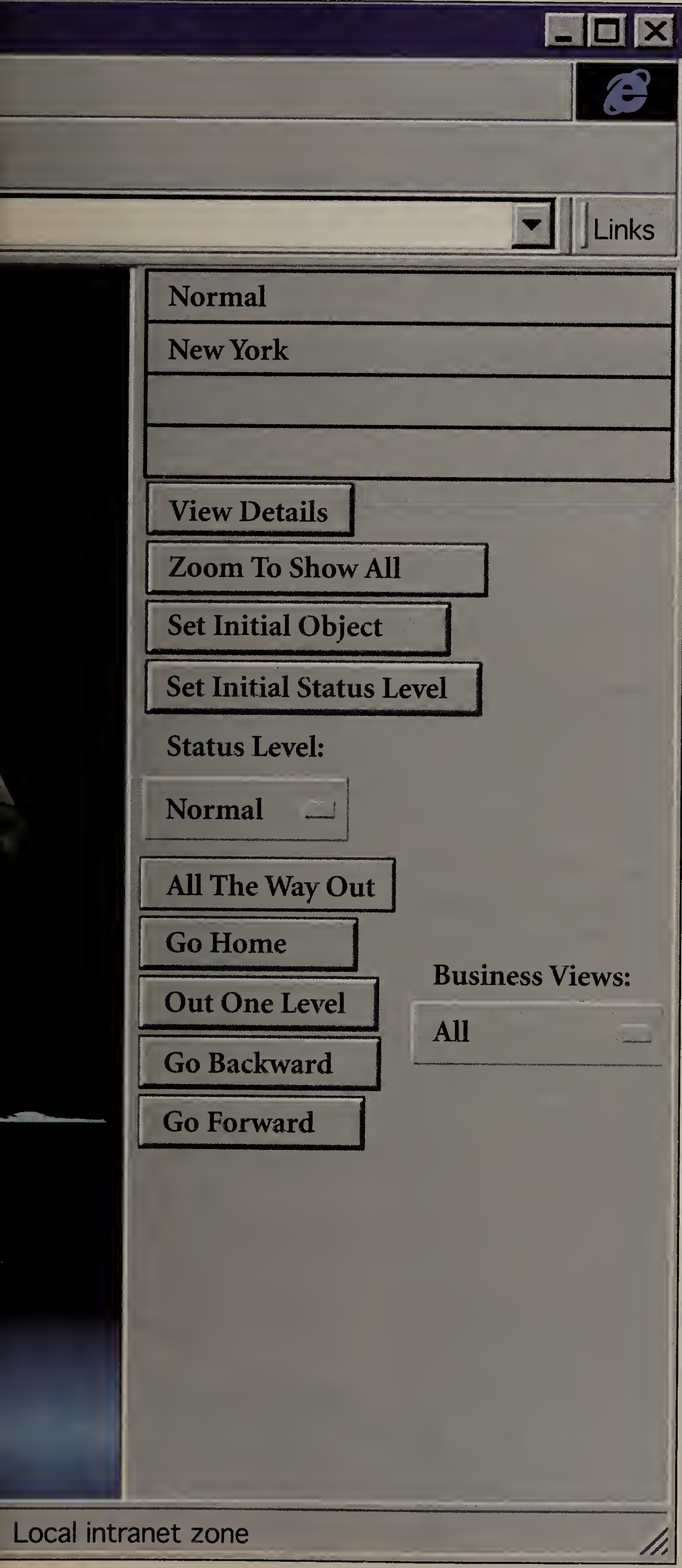
e World With A Browser.



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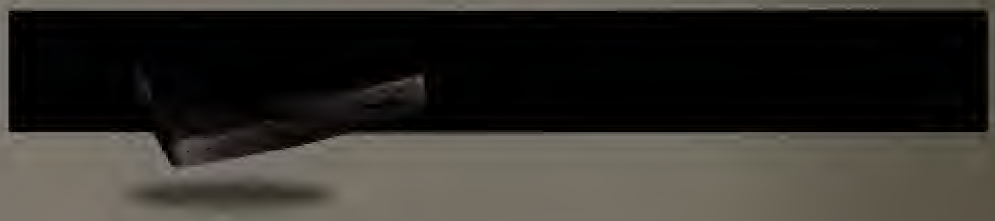

You have one dedicated phone line and modem, right? Which means, only one person on the net at a time. And everyone else waits. So what's the solution? More modems? More phone lines? Too expensive. Plus, you will still have to wait for the modems to slowly transfer data. Consider the FlowPoint™ Instant Internet Bundle instead.

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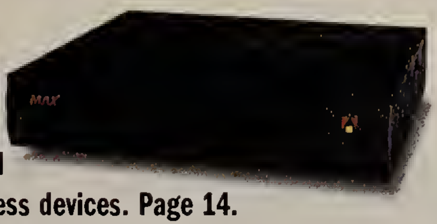
Circle Reader Service **#25**

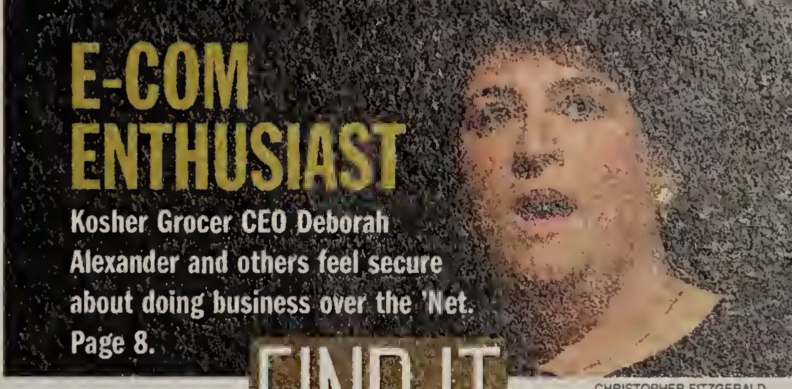
EASY ACCESS

With the Cisco 2600 access router, branch offices will have a new way to support voice and fax traffic. Page 30.

ASCEND MAKES ITSELF HEARD



Ascend is adding voice support to its MAX 4000 and 6000 remote access devices. Page 14.



E-COM ENTHUSIAST

Kosher Grocer CEO Deborah Alexander and others feel secure about doing business over the 'Net. Page 8.

CHRISTOPHER FITZGERALD

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Java portability

Platform-independent Java applications are coming into their own. Page 38.

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JASON GROW

HIGH-TECH HOSPITALITY: Book a room at one of the enterprising hotels touting high-speed Internet access as an amenity. Page 1.

DEBUT: COOL TOOLS. A new column by *Network World* Test Center Director Lee Schlesinger providing quick takes on high-tech gadgets. First up, Axis scores with a removable storage server. Page 50.

SHAWN HENRY

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To quickly get to any online info referenced in *Network World*, enter its DocFinder number in the input box on the home page.

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This Week

Only on Fusion

Trade shows. Online Reporter Sandra Gittlen is sick, sick, sick of pointless keynotes given by long-winded executives who have nothing new to say. What about you? **DocFinder: 6443**

IT labor shortage. In all the debate over whether there's really a shortage of IT professionals, one side has been drowned out —the high-tech companies in other countries that would be hurt if we eased our immigration policies. See what the co-founder of one Indian software firm has to say. **DocFinder: 6444**

Netscape. Have you taken a look at Netscape's home page lately? It looks more like a cross between Lycos and Yahoo than the public face of a paradigm-shifting software powerhouse. Is Netscape conceding defeat in the browser, server and application wars and starting to turn itself into a glorified search engine? Jump in with your thoughts. **DocFinder: 6445**

Keeping Current. The network industry may not be in a slump, but don't expect the double-digit profit increases of years' past, Fred McClimans writes. **DocFinder: 6446**

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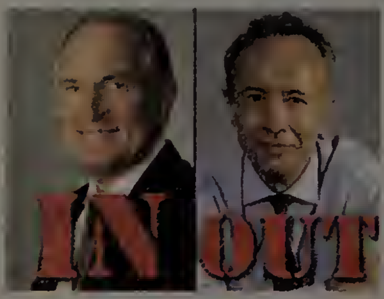
News briefs, March 30, 1998

Big shoes to fill at Intel

■ Intel Corp. CEO Andy Grove last week announced that he is stepping down and that company President and Chief Operating Officer Craig Barrett will take his place following Intel's annual meeting on May 20. The 61-year-old Grove, who helped start Intel 30 years ago, will continue serving as the company's chairman. The $25 billion company said the change was unrelated to Grove's recent battle with prostate cancer or to the company's recent slack financial performance. Barrett, 58, replaced Grove as president last year — a step that led to widespread speculation that Barrett would succeed Grove as CEO. Grove and Barrett have been working together to fuel more demand for Intel's chips by getting the company into new markets, such as network switches.



Craig Barrett Andy Grove

AOL jumps into VPN game

■ America Online, Inc. next week will introduce its first virtual private network (VPN) service called AOL Enterprise. As expected, the service will let business users set up secure VPNs using AOL's network (*NW*, Jan. 19, page 1).

AOL will be offering its VPN customers security features based on products from Security Dynamics, Inc., Checkpoint Software Technologies, Ltd. and Aventail Corp. AOL also has teamed with Lotus Development Corp. to integrate the VPN service with Lotus' Domino servers. Additionally, AOL is offering XcelleNet, Inc.'s RemoteWare remote access systems management software. The service is available now for $500 per year per user for unlimited access.

Fight erupts over wholesale use of WorldCom net

■ Recently reborn long-distance carrier Williams Communications last week sued WorldCom, Inc. for allegedly placing crippling restrictions on a key piece of a network Williams shares with WorldCom. For several years, Williams has run video traffic along a single strand of WorldCom's network.

Last year, Williams began sending Internet traffic over the route as well. Now Williams claims WorldCom is refusing to carry the Internet traffic for fear of competition and is reluctant to provide additional wholesale capacity. A WorldCom spokeswoman declined comment.

Bay Networks eyes ISP backbone

■ Bay Networks, Inc. last week confirmed that the company is developing a high-end router for Internet service providers. The device, expected in mid-1999, will sport OC-12 links and use the parallel processing architecture of Bay's existing Backbone Node router, company officials said.

The router also is expected to utilize the 1M packet/sec Route/Switch Processors Bay unveiled a year ago (*NW*, May 12, 1997, page 6). Bay was tight-lipped on further details of its BFR, an acronym for Big, Fast Router.

3Com and Cabletron take financial lumps

■ 3Com Corp. and Cabletron Systems, Inc. last week each announced disappointing quarterly results, and industry analysts said both companies have to rethink their focus if they're going to prosper in the increasingly competitive internetwork equipment market.

Cabletron reported revenue of $311.5 million for its fiscal fourth quarter, ended Feb. 28, down 18% from last year's fourth quarter revenue of $380.5 million. The company also laid off 180 workers last week. Separately, 3Com reported revenue of $1.25 billion for the company's third fiscal quarter, ended March 1, down 14% from $1.46 billion in revenue posted for the third quarter last year. 3Com took a $9.9 million hit for charges related to its acquisition of U.S. Robotics last June.

New Web language to boost e-com

XML gets Microsoft, Sun, Oracle backing; could displace current Web technology.

By Ellen Messmer
Seattle

Though the World Wide Web Consortium (W3C) only finalized the standard last month, the network industry is hailing Extensible Markup Language (XML) as the technology that will make the current HTML-based Web obsolete.

That was the message at last week's XML Conference '98 from the likes of Microsoft Corp., Sun Microsystems, Inc., Oracle Corp. and a raft of other smaller XML-happy vendors, such as Microstar Software, Ltd.

Microsoft's Bosworth: *"XML is going to change the Web completely."*

The reason XML will succeed, the companies say, is that the language provides a neutral format, so XML documents can easily be converted into HTML or anything else.

Furthermore, anybody can devise XML keywords, or meta tags, that can be used to have a database or application perform a function when it encounters them. For example, a database could search for words in a document encoded with specific XML tags. The idea is to more accurately and more quickly gather information from multiple far-flung sources.

Fundamental change

"XML will change the Web as fundamentally as HTML," said Adam Bosworth, general manager of Microsoft's Web applications group, during his keynote presentation at the XML Conference '98, here.

Microsoft, feverishly building its electronic commerce product strategy around XML, envisions the HTML-based Web will be augmented — if not replaced — by a new breed of three-tiered applications in which XML servers pull formatted data out of back-end databases, save it as XML, and convert the data into any format to deliver to the client.

In fact, the next version of the Microsoft commerce server, called Site-Server, expected out in July, will use XML for processing business information. So will Microsoft's desktop application package, Office.

Microsoft is convinced XML will eventually replace today's Electronic Data Interchange formats, used widely by larger businesses to exchange purchase orders, invoices and shipping notices.

And in somewhat of a rush, Microsoft added XML support to its Internet Explorer 4.0 browser even before the XML standard was completed.

Sources at Microsoft told *Network World* the company will have a fully XML-compliant browser before year-end.

Although Microsoft is an advocate of the XML meta language, Jon Bosak, Sun's online information technology architect — who is widely considered the father of XML — reminded the conference audience that XML is intended to remain a vendor-independent W3C standard. XML is actually a growing family of standards (see graphic).

Because Microsoft moved so quickly to embrace XML, "it would be possible to reach the mistaken conclusion that Microsoft started XML," Bosak pointed out.

"Some say XML is a Microsoft conspiracy to control the world," Bosak said. "But XML, I think, will become the universal format for structured data in general. And everyone agrees the Web is going to be managed using XML."

Although XML is still in its infancy, a number of high-powered network users, including the U.S. Air Force and The Boeing Co., are taking a close look at the technology.

The Air Force, for instance, next week will get a prototype XML authoring environment called the Pre-Award Systems Acquisition Processing System, which will be used to manage documents related to large-scale military procurements.

Built by Idaho Falls-based developer Frontline Solutions, Inc. using Microstar Software, Ltd.'s XML design tools, this document-management system will be used by the Air Force to issue requests for proposal (RFPs) over the Internet to suppliers such as Boeing and Lockheed Corp.

At present, RFP documents are generally faxed or mailed, not sent electronically. ■

The XML family

- **XML:** A meta language used to define markup languages; fully compatible with ISO's Standard Generalized Markup Language.
- **Extensible Linking Language (XLL):** Features simple and complex linking constructs, with sophisticated addressing via Xpointers. Unlike HTML hyperlinks, XLL links (XLinks) need not be embedded within a document.
- **Extensible Style Language (ESL):** A subset of ISO's Document Style Semantics and Specification Language; provides for presentation of XML data.

The World Wide Web Consortium finalized XML 1.0 just last month. The other languages mentioned are works in progress.

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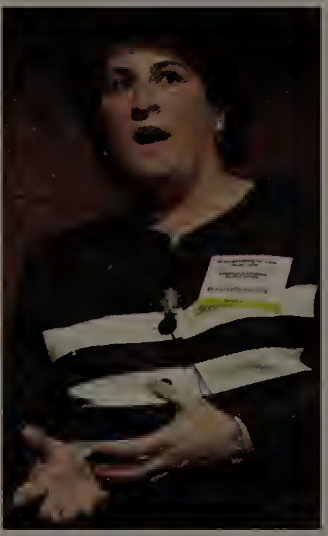
E-com show participants get down to business

By Sandra Gittlen
Boston

You're not alone if you're tired of hearing about the virtues of consumer Web sites such as bookseller amazon.com or brokerage eSchwab.

Keynote speakers and panelists at last week's Internet Commerce Expo (ICE) here said the real action is in business-to-business electronic commerce over the 'Net.

"E-commerce is not about someone sitting in his living room ordering side orders for their chicken [dinner]," said Jeff Papows, president and CEO of Lotus Development Corp., during his keynote address. "It's about business-to-business transactions."


Deborah Alexander *blames banks for security's bad name.*

By the year 2000, business-to-consumer 'Net commerce will generate $7 billion in revenue, while business-to-business 'Net commerce transactions will be worth a total of more than $150 billion, according to International Data Corp., in Framingham, Mass.

Digital Equipment Corp. will look to get a piece of the business-to-business action with its new MISTI online cataloging system, said Don Harbert, vice president of Digital's Internet business unit. The software combines information from various suppliers into one database, letting users search for a product without needing to know which vendor offers it.

Sybase, Inc. co-founder Mark Hoffman said the focus on 'Net commerce marks the end of traditional electronic data interchange (EDI).

"EDI is a dead man walking," said Hoffman, who is now CEO and president of start-up Commerce One, Inc. "EDI doesn't provide for real-time interactive transactions between buyers and sellers."

Hoffman believes a complete change in the buying and selling landscape is needed. "Currently, every buyer is dealing with every supplier" on an individual basis, he said. "That's terribly inefficient."

What buyers need is a "catalog of catalogs," or integrated extranet, so they can comparison shop online, Hoffman said. In addition, suppliers need to offer expanded services, such as package tracking, to lure customers. A benefit of new electronic commerce is that prices can change daily or even hourly to reflect immediate market changes — something Hoffman said is not possible with EDI or person-to-person commerce.

ICE
INTERNET COMMERCE EXPO

Most keynote speakers and panelists at ICE agreed that security issues surrounding electronic commerce have been overblown.

"We have the bandwidth and security in place to go forward with e-commerce," Hoffman said.

Anthony Bay, general manager of Microsoft Corp.'s Internet Business Unit, said the security concerns people had a year ago have been addressed with standards and pending standards such as Secure Sockets Layer and Secure Electronic Transaction. "Security works well enough today," he said.

Panelists participating in an "Internet town meeting" session said Internet security would have a better reputation if more responsible parties would step up to defend the 'Net as a viable electronic commerce platform.

"Financial institutions and credit card companies need to say the 'Net is a secure place to do business," said panelist Deborah Alexander, CEO of online grocery store Kosher Grocer. ■

Vendors vie to become telecom powerhouses

FCC's LMDS auctions could spur wireless market.

By Denise Pappalardo
Washington, D.C.

At first glance, it seems as if the Federal Communications Commission's local multipoint distribution service (LMDS) auctions concluded last week without the participation of any telecommunications bigwigs.

But don't let little-known companies such as WNP Communications, Inc. and Nextband Communications LLC, which took home most of the LMDS booty, fool you.

WNP, of Earlysville, Va., laid out the most money: $186 million for LMDS licenses in 40 markets. The company has telecommunications veteran Royce Holland as a principal and primary investor.

Holland is former president of MFS Communications and current CEO at Allegiance Telecom, Inc., a competitive local exchange carrier (CLEC). WNP's president, Thomas Jones, also is an industry veteran. Before starting his own business, New Venture Directories, Inc., an industry consulting firm, more than five years ago, Jones was with Netrix Corp. Netrix is a maker of backbone switching products.

WNP won LMDS A licenses in prime markets that included New York, Chicago, San Francisco, Philadelphia, Detroit, Dallas-Fort Worth and Boston. WNP also picked up a B license in the Los Angeles market.

WNP is planning to offer broadband services to business customers and other services providers using LMDS spectrum, Jones said. But the start-up is still in the process of acquiring infrastructure equipment, he said.

Nextband Communications, based here, is investing $134 million in licenses that cover 42 markets. Nextband's exact service plans are not set in stone, but industry heavyweights Craig McCaw and Daniel Akerson are creating Nextband's business plan.

Nextband is jointly owned by Nextlink Communications, Inc. and Nextel Spectrum Acquisition Corp., a wholly owned subsidiary of Nextel Communications, Inc.

Akerson, who is CEO of Nextel, a specialized radio service provider, holds the same title at Nextband.

Nextlink Communications, Inc. is a competitive telecommunications service provider McCaw founded in 1994. He is still the company's primary shareholder. McCaw previously founded McCaw Cellular Communications, Inc., which AT&T bought in 1994 for $12.6 billion.

While more recognizable than some of the other big LMDS bidders, WinStar LMDS LLC is certainly not a household name. But the company dropped $43 million for 15 LMDS licenses.

The parent company of Winstar LMDS, WinStar Communications, Inc., has centered its business in the wireless service arena, and is expected to use LMDS to expand its service offerings.

Although big name telecommunications carriers such as AT&T, Sprint Corp. and MCI Communications Corp. were curiously absent at the LMDS auctions, analysts said the new LMDS players could create some future telecom powerhouses.

"In reality what we have here is a group of very experienced service providers that did their homework on the values that LMDS will bring to the market," said Bob Egan, research director at Gartner Group, Inc., a Stamford, Conn.-based consulting firm. These top bidders, he predicted, "are the CLECs of the future."

The industry veterans and telecommunications start-ups see LMDS as a quick and less expensive way to expand into new markets. LMDS has the most spectrum — up to 1150 MHz with its A licenses — of any wireless spectrum that has been auctioned off by the FCC.

The first LMDS networks will be in place this year, and by 2002, LMDS will be prevalent in local markets, Egan said. ■

SOME QUICK LMDS FACTS

- ▶ LMDS is a fixed wireless point to multipoint microwave technology.
- ▶ LMDS is the highest capacity wireless spectrum available today.
- ▶ The LMDS spectrum is in the 28 GHz and 31 GHz bands.
- ▶ The FCC auctioned off two sets of LMDS licenses, A and B.
- ▶ A block licenses include 1150 MHz worth of spectrum.
- ▶ B block licenses include 150 MHz worth of spectrum.
- ▶ The licenses are expected to be used to support wireless local loop, high-bandwidth data, voice and Internet access and video services.

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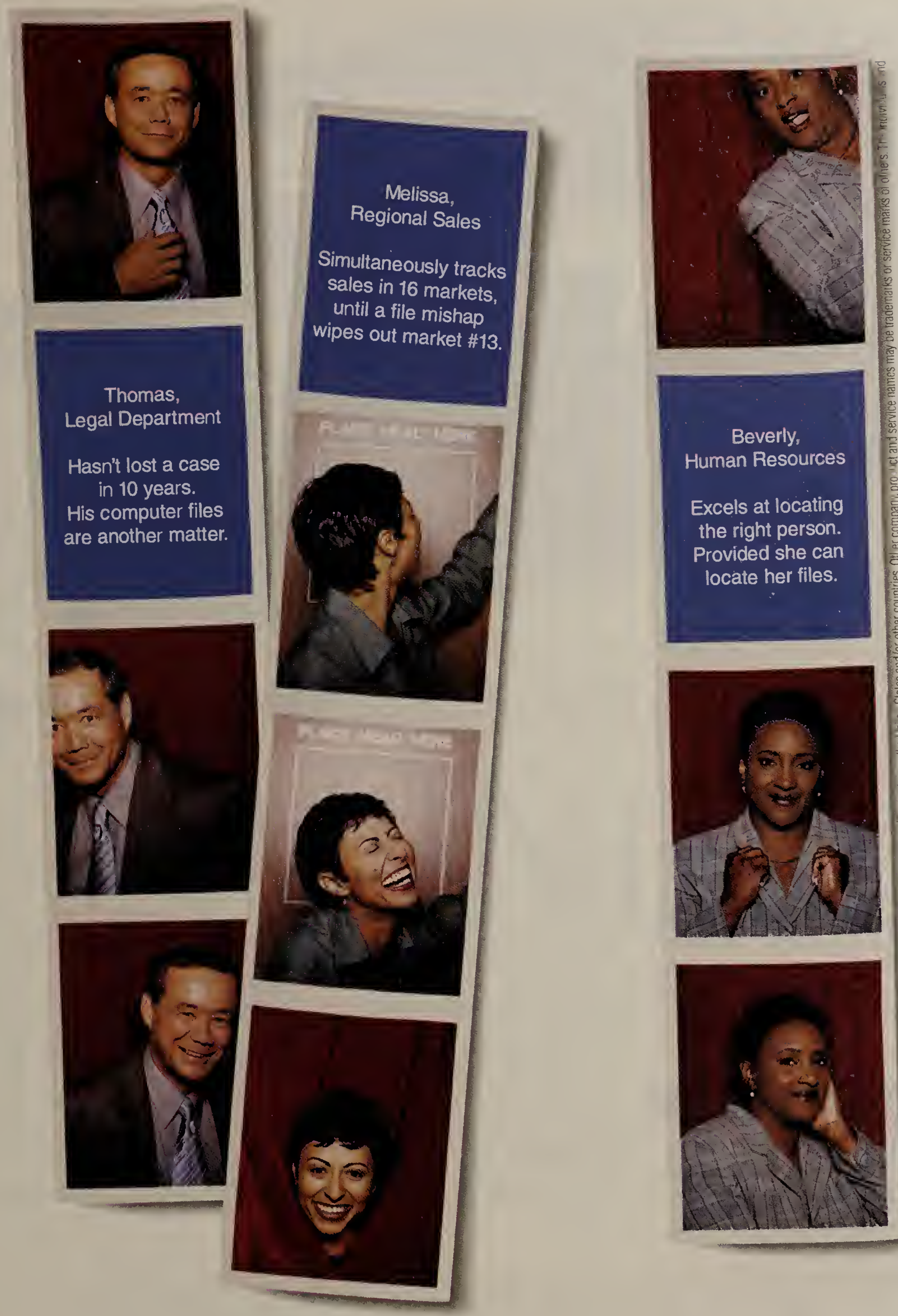
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Spam hell

Continued from page 1

himself as George Hughes, of Pembroke Pines, Fla., had appropriated a ShockMedia-owned domain name, infoweb.com, as the fraudulent return address of a bulk e-mailing that touted a marketing scheme. (The spammer's identity was never authenticated by King or *Network World.*)

An hour later the company's servers experienced a series of crippling service denials, which King now believes may either have been related to the spam, the effects of a widespread Teardrop2 virus attack against Microsoft NT servers, or both.

At 5:30 p.m., ShockMedia fielded what would be the first of some 96,000 bounced e-mails and angry replies from spam recipients who presumed King's company was the sender.

Figuring that bounced messages represent only about 10% of what was actually generated, King said, "that's a million pieces of mail that got sent out by this guy before the ISP stopped it."

From that initial forwarded copy of the spam, King ascertained that the real culprit was using a Florida-based ISP named Netrox, Inc.

He called Netrox and asked a technician to pull the plug on the spammer, or, at the very least, to provide King with a way to contact the person. The technician said he couldn't give out any information about a client without a court order and told King to e-mail details about the problem to the ISP.

King said he immediately complied.

"The mails continued until 11:30 p.m., when I decided to turn the server off," King said. "This stopped it . . . for now."

Friday, March 6

After tending to other matters in the morning, King restarted the mail server at midday. The server immediately raced to heavy stress levels and indicated that all of its resources were being occupied receiving e-mail — bounced spam and flames.

King e-mailed another plea for help to Netrox at 12:32 p.m.

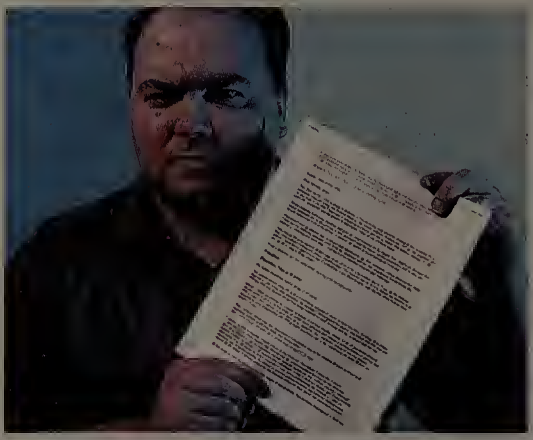
"I again asked that they cooperate in this matter and take appropriate actions to stop the assault," he said. "I again reminded them of [the possible] legal ramifications and asked them to get in touch with their client and then give me a response of some sort. I received no reply."

King also tried to stem the flow by changing the server domain name to a fictitious one, but the ruse failed to help.

He then turned to the anti-spam newsgroup news.admin.net-abuse.email for assistance and was advised to contact the FBI, which in turn suggested he try the Canadian authorities. The latter promised to investigate once King provided backup information, which he subsequently has done.

At 4 p.m., with no letup discernible, King called Netrox again, only to be told to send headers of the e-mail that was "bothering" him. He complied.

An hour later, "after realizing that the mail server was almost out of disk space," King said he removed the server "completely from the drive to get disk space back and let the computer take a break."



King holds the paper *that chronicles his horrific tale of being spammed. The entire document can be found at www.infoweb.com.*

"The assault was finally over — or so I thought," he said.

Saturday, March 7

A new day and a new idea: King decided to set up a mail server on a fresh machine to accept mail from info@infoweb.com. His goal was to accumulate a batch of bounced spam he could later use as "proof" in the legal actions he was now determined to pursue.

"I got the new mail server running at about 6 p.m.," King said. "Thinking that the people from Netrox had surely stopped the guy by now, I thought that once I got [the new server] running there would be peace and quiet."

It turns out he thought wrong.

Over the next 12 hours the server sucked up 270M bytes of returned messages, "all addressed to info@infoweb.com and usually originating from a PPP connection at Netrox," King said.

King fashioned another e-mail to Netrox, this time informing the ISP that he would be charging it a $25 per message usage fee "for the resources they were consuming" by failing to stop the spammer.

"I told [Netrox] 48 hours earlier that this was going on and [the ISP] took absolutely no measures to even contact the [spammer] or let me know what was going on," King said.

He watched the mail pile up all night long before nodding off at 6 a.m.

Sunday, March 8

King finally received an e-mail reply at 8:22 a.m. from a Netrox official named David Marcus, which read: "We don't support spammers. This matter will be handled. I apologize for this annoyance. We won't even mass mail for our own purposes, so I can assure you that we will not put up with it from others."

Marcus last week told *Network World* that he "didn't know the specific user" who had misused King's domain name.

"There were two spam users that we axed recently," he added. "It's hard to be pre-emptive with that, but anytime anybody does do spam we ax them from the system."

The flow of spam did ease up on this evening, but King noted in his online chronology that mail related to the spamming "keeps coming through."

A week later and still steamed, King said: "We've got to stop this kind of stuff before it overwhelms the whole Internet."

King fears that there may be long-term damage to his company's reputation as a result of the episode.

"We think infoweb is a tremendously powerful name," he said. "And the future long-term value of that name may be impacted by the fact that people might think we are a bunch of spammers." ■

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Readers respond to our "spam or legit?" poll

Earlier this month, 247 readers went to our Web site (www.nwfusion.com) to label five statements as either spam or legit. Here are the statements and results:

❶ You check out a Web site and request information online, which the company sends to the e-mail address you provide. The company also starts e-mailing its monthly newsletter.	Spam	132
	Legit	107
❷ You visit a Web site and read information regarding Product Y. The company harvests your e-mail address from your browser and sends more information about that product.	Spam	215
	Legit	29
❸ Company Z is an established supplier of yours that sends e-mail updates regarding products you buy. Then the company e-mails you about a new product, which is not related, but could be presumed to be of interest to you.	Spam	65
	Legit	182
❹ A newsgroup participant posts a message asking for opinions about the best spam-filtering software available. A company that makes such software sends an e-mail directly to the questioner.	Spam	81
	Legit	164
❺ You give a trade publication your e-mail address. Later, the publication sends you an e-mail touting its new daily e-mail newsletter.	Spam	90
	Legit	157

Note: Some readers did not answer every question.

Carriers unite to span continent

InterconX alliance challenges the Big Three.

By Tim Greene

Three relatively obscure carriers have formed an alliance and agreed to link their respective ATM backbones to form an OC-12 network spanning 21,000 route miles across the U.S. and Canada.

Together, the InterconX alliance members — IXC Communications, Inc., American Communications Services, Inc. (ACSI), and Canadian carrier Fonorola — can compete with the big boys, said David Parham, principal with Parham Associates, a network consultant in Wichita Falls, Texas.

When Parham set up a frame relay network for Barber Trucking Co. connecting five cities in Texas, Oklahoma and Missouri, IXC beat out AT&T and others because it offered the best price overall.

But Barber also wanted to tie in a location in Montana, which was beyond IXC's service area. IXC could have linked the Montana site, but the service provider would have had to buy the connection from another carrier at a prohibitive cost, Parham said.

With the InterconX alliance, the chances of running into that type of problem are reduced, Parham said.

The three companies will not develop a joint product line, but rather will use each others' networks to expand the reach of their own. They will work together to run and manage their networks as one, but will remain independent when it comes to marketing, sales and pricing. They could conceivably even bid against each other on the same projects, members said.

The carriers agreed to pay each other a set amount for network resources they use, and those prices are below what the alliance members would have to pay other unaffiliated carriers.

Each will continue to offer its existing portfolio of services, which include dedicated lines as well as frame relay and ATM. IXC and ACSI also are planning to offer voice over IP.

Each of the three carriers already had expansion plans and is proceeding ahead with them, but the carriers decided to band together because they could grow their service territory faster by sharing.

IXC, ACSI and Fonorola all anchor their networks with Newbridge Networks, Inc. ATM switches. They also use a common management platform that allows them to provision designated ports on each others' switches as if they were in their own network.

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Sun

Continued from page 1

release of Enterprise JavaBeans (EJB) 1.0, the component architecture deemed critical to the development of cross-platform server applications.

But the news that drew the biggest stir at the conference came from a courthouse 50 miles away in San Jose, where a U.S. district court judge ordered Microsoft to remove the Java-compatible logo from its Internet Explorer 4.0 browser.

Though jubilant over the judge's decision, Sun officials expressed concern that the buzz created by the legal victory overshadowed Sun's new Java tools, which promise to help developers build a wider range of Java applications for the enterprise and consumer appliance market.

"If I could have had the court announcement at any time, it would not have been at JavaOne," said Sun CEO Scott McNealy at a press conference on Wednesday. "We want you to be writing about Java, not a contract dispute."

Besides releasing EJB 1.0, Sun last week outlined a number of other products and plans, including the following:

- A group of tools for developing and deploying Java applications on both clients and servers, slated to be rolled out through the end of the year.
- The release of a draft specification for EmbeddedJava technology for inserting Java applications in devices such as routers, switches, pagers, medical devices and telephony infrastructure equipment.
- The availability of Sun's oft-delayed JavaStation network computer.
- Plans for several specifications to help developers build Java applications to run in automobiles, televisions and telephones. Draft specifications are slated for availability in the third quarter.
- The release of final specifications for software that will allow developers to build and deploy Java enterprise messaging applications and access a wide range of relational databases.

Anne Thomas, senior analyst at Patricia Seybold Group, Inc., in Boston, said the embracing of EJB by more than 20 Java licensees, including Symantec Corp. and Oracle Corp., "proves that Java has conclusively moved into the enterprise space."

In particular, IBM has made a big commitment to EJB, she said.

"We're talking about supporting EJB on everything from their [PCs] all the way up to their massive [mainframe] systems," Thomas said. "It's huge."

IBM, by far Sun's most powerful Java ally, said it would support EJB technology across its middleware and applications servers.

IBM also unveiled jCentral, an Internet search engine for locating and sharing Java-related information such as code, applets, JavaBeans, newsgroup articles and tutorials.

Another analyst said the quantity and variety of Sun's JavaOne announcements will help push Java toward maturity.

"This is exactly what Sun needs to do," said Ron Rappaport, an analyst with Zona Research, Inc., in Redwood City, Calif. "These are the kinds of little pieces that need to be in place for Sun to claim that Java is a robust development environment."

Noting that Sun once again has pushed back the release of HotSpot technology, designed to speed Java's performance — this time to next fall — Rappaport said "delivering this technology to the people who want it today is one of Sun's greatest challenges."

"This is an industry that is impatient," he said. "That's what was behind [Hewlett-Packard Co.'s] move."

Only three days before the show kicked off, Java licensee and presumed Sun ally HP bolted from the fold, announcing it had developed its own flavor of Java software to run on electronic devices, including HP's printers.

Worse, HP entered into an agreement allowing Microsoft to license the technology for its Windows CE operating system.

Microsoft, of course, has openly rejected Sun's efforts to retain control over Java standards.

The software giant's release of its Internet Explorer 4.0 browser last fall prompted a lawsuit by Sun, which alleged that the browser failed Java compatibility tests, thus violating the licensing agreement signed by Microsoft.

And earlier this month, Microsoft roiled the Java waters even further when it unveiled plans for a revised version of its Java tools for Windows-based computers that far exceeds the changes it made to Java in Internet Explorer 4.0.

Besides IBM, dozens of Java licensees used last week's show to hype new Java products, including the following:

- Weblogic, Inc., of San Francisco, which announced software for its Tengah Java application server. The new tool, Tengah Zero Administration Client (ZAC), automates the distribution and management of application software, system software and other information to desktops and servers. ZAC can send data through enterprise networks, as well as corporate 'Nets and the Internet.
- Rogue Wave Software, Inc., of Boulder, Colo., unveiled StudioJ, a set of Java components for graphical user interface development, data analysis, charting and database access. StudioJ includes four class libraries for Java developers. ■

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JAVA: THE ROAD AHEAD

Also at JavaOne last week, Sun announced the following product release schedule for the upcoming Java Development Kit, known as JDK 1.2:

April

- Release of JDK 1.1.6, incorporating Symantec's Just-In-Time Compiler 3.0 into the Java Runtime Environment for Microsoft Windows.

Summer

- Final release of JDK 1.2.
- Beta version of HotSpot virtual machine for JDK 1.2. HotSpot is designed to increase the speed of Java applications.
- Release of JavaServer Engine, a tool for building and deploying custom applications.
- Beta version of Java Modeler, an analysis and design tool that can automate and extract object designs from existing Java source code.

Fall

- Final version of HotSpot to ship.
- Final version of Java Blend, a tool for building applications to run on relational databases.
- Final version of JavaSafe, which enables developers in different places to access any type of source code, Web content and file-based information.
- Final version of Java Modeler.

JavaOne: Gathering of the Java faithful

Developers' momentum will overcome potential faction fighting.

By Andy Eddy and Chris Nerney
San Francisco

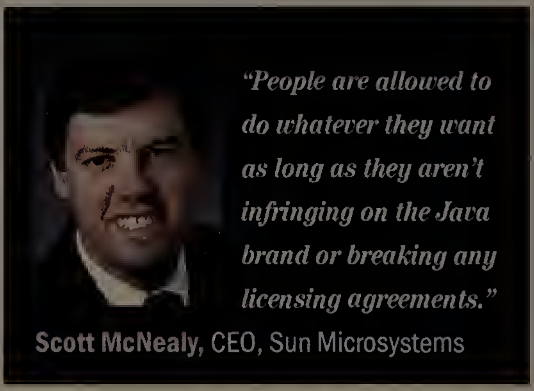
At times it may have resembled a tent revival or a Tony Robbins infomercial, but among the 14,000 attendees of last week's JavaOne conference, enthusiasm for Java was genuine.

Strip away the glitz and cheerleading supplied by host Sun Microsystems, Inc. and dozens of Java licensees — including IBM, Oracle Corp. and Novell, Inc. — and you had thousands of developers who are loyal to the Sun programming language's "write once, run anywhere" premise.

Few seemed overly concerned by Hewlett-Packard Co.'s (HP) decision, announced on the eve of JavaOne, to build its own Java Virtual Machine for consumer devices and license the JVM to Microsoft Corp.

"The rest of the world has momentum going in another direction," said Robert Adams, vice president of business development for SoftPlus, an Internet systems integrator in Cupertino, Calif. "It's going to be difficult for HP to hold a conference anywhere and draw 14,000 developers with what they have. There's just too much momentum in chips, in embedded systems, in smart cards, in operating systems, in mobile phones."

"HP is looking to divide the market with more Internet-related tools and technology," said Kara Kapczynski, regional technology director for Cambridge Technology Partners, in San Mateo, Calif. "But I think their move comes a little bit late in the game. To have a divergent strategy at this point. . . . I don't think [HP] will be successful."



"People are allowed to do whatever they want as long as they aren't infringing on the Java brand or breaking any licensing agreements."

Scott McNealy, CEO, Sun Microsystems

Whether HP is joining Microsoft in trying to split the Java platform is still subject to debate. For his part, Sun CEO Scott McNealy stuck to the high road when asked about HP's plans.

"People are allowed to go do whatever they want as long as they aren't infringing on the Java brand or breaking any licensing agreements," McNealy said. "HP is a very honorable, straightforward and high-character company, so I don't think they'll do anything that steps on our IP [intellectual property]."

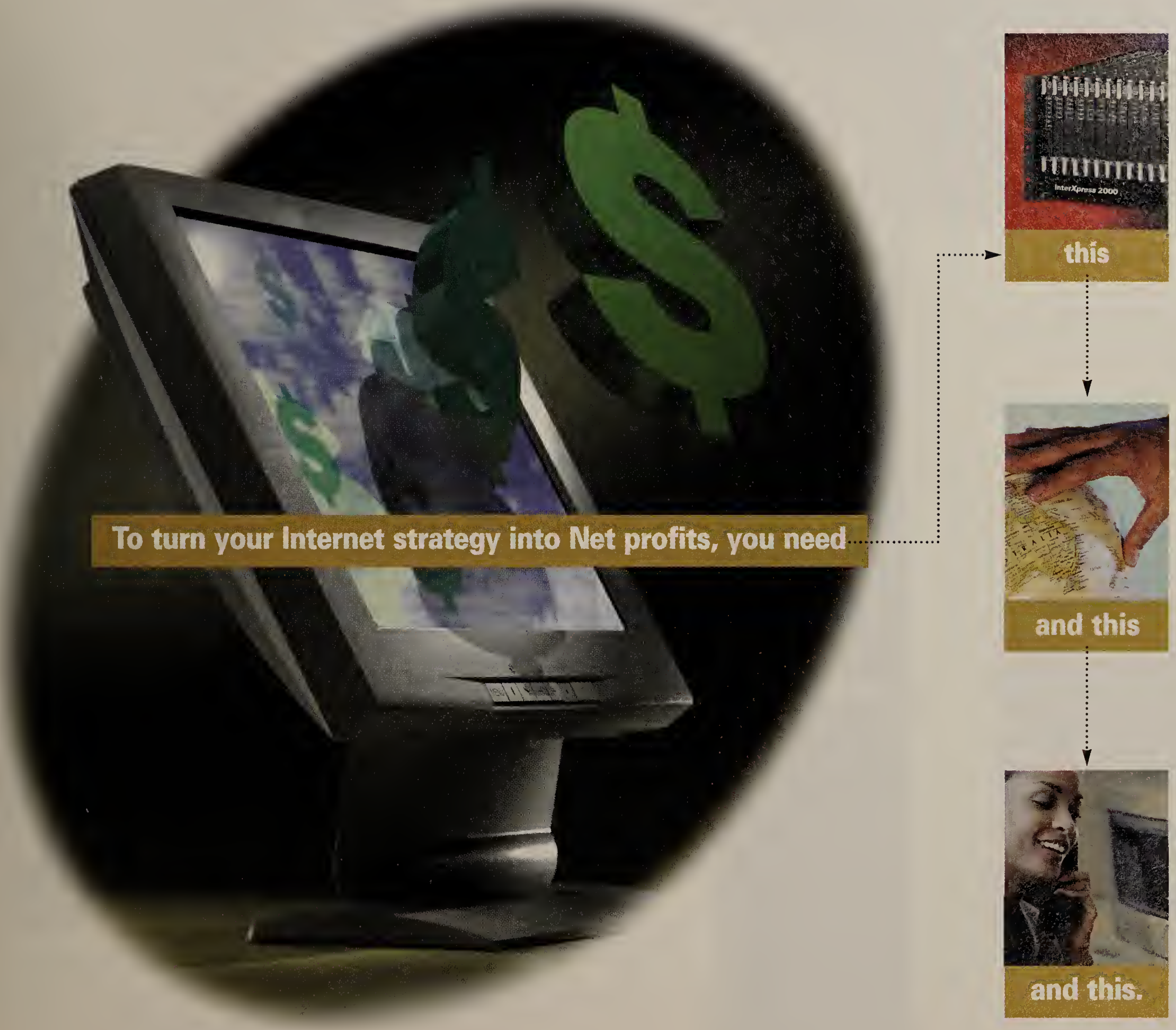
Big threat

The big threat to Java portability, most programmers agreed, remains Microsoft. Thus, by the time McNealy gave his keynote speech on Wednesday — one day after a U.S. District Court judge ordered Microsoft to remove the Java-compatible logo from its Internet Explorer 4.0 browser — the mood at the conference was almost giddy.

Still, one attendee warned that the court decision would not necessarily drive Windows developers toward Sun's version of Java. "The typical Microsoft user is not going to look at [a product] and say, 'Oh, this isn't Java certified.' They don't care," said Jon Spelbring, technical education specialist for NSC Systems Group, Inc., a training facility in Downers Grove, Ill. ■

See a Java application portability report. Page 38.

SIEMENS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Ascend starts talking about voice calls

By Tim Greene
Alameda, Calif.

Ascend Communications, Inc. is joining the IP-voice craze that lets corporations avoid long-distance telephone calls by using their data networks as long-distance trunks.

Ascend this week will announce voice support for its MAX 4000 dial-up modem platform, which has traditionally supported remote access to data networks.

At the same time, Ascend is introducing the MAX 6000, a bigger, more powerful version of the MAX 4000 that can also handle the new voice hardware, known as MultiVoice cards.

The MAX 6000 addresses performance shortcomings of the lower powered MAX 4000. The MAX 6000 sports an extra T-I interface that lets the MAX 6000 handle 96 modem calls, 24 more than the MAX 4000.

Under certain software configurations, the modems in the MAX 4000 slow down when all of them are in use, according to Rob Welsh, director of access engineering for GTE Internetworking, the online division of GTE Corp. That problem is corrected with a more powerful CPU in the MAX 6000.

Welsh said he plans to start using the MAX 6000s this month to support Dialinx, a service that handles remote-dial access for corporations. The MAX 6000 is easy for users of the MAX 4000 to adopt, because the former can occupy the same rack space as the latter, Welsh said.

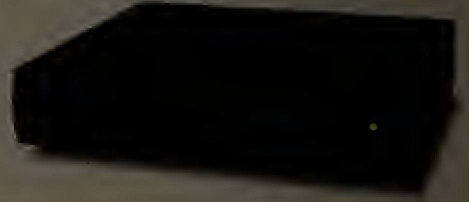
The MAX 6000 chassis costs $11,400, including termination for 120 ISDN calls. Configured with 96 modems as well as ISDN, and including Ascend's True Access Operating System, the MAX 6000 costs $54,840. It is available now.

Voice, too

Ascend's voice cards will let MAX customers tie the modem platforms to PBXes, so employees at a large corporate site can call other on-net sites over the corporate network, avoiding the public network.

ASCEND INTRODUCES BIG BROTHER FOR THE MAX 4000

Key differences between Ascend's older MAX 4000 and its new MAX 6000 remote access switch:



MAX 6000	MAX 4000
64-MHz CPU	25-MHz CPU
96 modems	72 modems
32M-byte DRAM	8M-byte DRAM
Eight fans	Four fans

Internet service provider PSINet, Inc. is looking at the Ascend boxes to support IP-voice services for its corporate customers, according to Mark Fedor, vice president of engineering at PSINet.

The MultiVoice cards come in eight-, 12- and 16-port models and cost $5,950, $8,250 and $10,000, respectively. The necessary software upgrade to handle voice costs $3,000.

Ascend said the cards represent the first phase of a three-phase strategy to carry voice over networks made up of Ascend data hardware.

Phase 2 of the MultiVoice strategy, due this summer, calls for running compressed voice over ATM.

Phase 3 will add interoperability among Ascend switches handling voice over IP, frame relay and ATM. Phase 3 will be completed by year-end.

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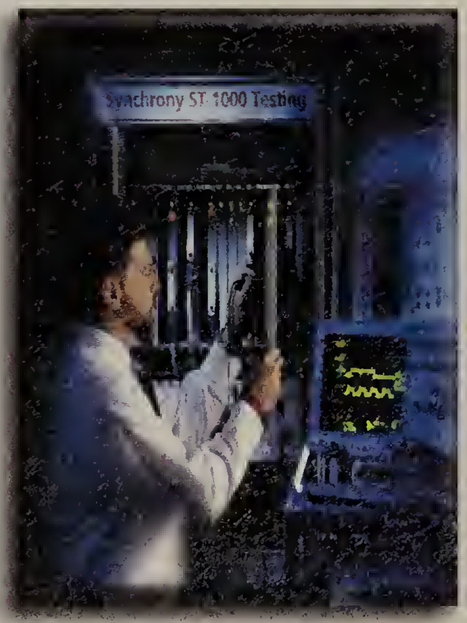

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*Circle Reader Service #**11***

Beta users find Windows Terminal Server's kryptonite

By John Cox
Redmond, Wash.

Microsoft Corp.'s thin-client product currently is thin on support for the company's strategic distributed-object technology.

Several companies testing a beta version of Windows Terminal Server (WTS), a multiuser version of Windows NT 4.0 that serves up applications to thin clients, said the new software can break down when used with Microsoft's Distributed Component Object Model (DCOM).

Microsoft last week acknowledged the problem and offered a short-term fix, which entails running DCOM applications on a server separate from the WTS machine. The WTS system then can use DCOM to access this applications server, said John Frederiksen, a Microsoft product manager.

Microsoft plans to solve the problem completely when WTS ships with NT 5.0, most likely late this year.

For some customers, the delay will be a problem. Siemens Nixdorf Information Systems, for example, sells a branch banking system that consists of Visual Basic client applications that use DCOM to access application services running on NT Server. When Siemens ported its product to the beta version of WTS, DCOM simply stopped working. As a result, Siemens' customers might need to buy and administer additional servers to make the banking system work.

DCOM consists of a protocol and services that let ActiveX components communicate over a network. Microsoft has made the distributed-object technology part of the company's operating system software, rather than requiring separate DCOM software to be loaded and maintained on clients and servers.

But many customers have barely started using DCOM, which was introduced in NT 4.0.

''We're working with DCOM in our development lab, but we don't have it deployed in any production environment,'' said Larry Lippel, chief electronic commerce officer for American Floral Services, Inc., an Oklahoma City financial clearing house for wired floral orders. American Floral is a WTS beta site.

WTS does support the distributed-object technology, just not completely, Frederiksen emphasized. ''We do support DCOM if the client side of the application runs on WTS and the server side runs on some other NT Server,'' he said.

DCOM uses four different techniques to activate Component Object Model objects. Currently, WTS only supports one of these techniques. ''That decision was based on time-to-market considerations and customer feedback,'' Frederiksen said. ''Right now, [supporting all four DCOM activation techniques] is not a big customer requirement.''

For the initial WTS release, which is due out by June, Microsoft made changes in the NT 4.0 kernel, memory manager and thread scheduler. To some degree, WTS becomes its own operating system.

But in NT 5.0, Microsoft wants to create a single standard operating system that can handle multiple terminal sessions, according to Frederiksen.

Microsoft will finalize pricing for WTS in the next few weeks. Frederiksen said customers can expect a pricing model similar to today's model for Windows desktops and NT servers, under which customers pay for a Windows 32-bit desktop, an NT Server license and a client access license. ■

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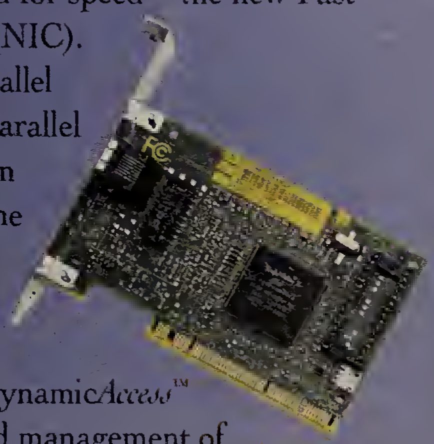

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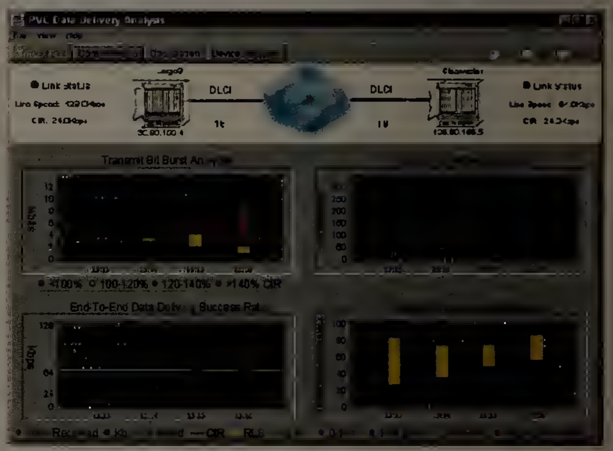
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Local Networks

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Briefs

■ **Allied Telesyn International,** *of Sunnyvale, Calif., last week unveiled two LAN switches that enable companies to migrate from* **Ethernet to Fast Ethernet** *without spending big bucks. The AT-3726 is a workgroup switch that boasts 24 10Base-T ports, one fixed 10/100Base-TX uplink and a slot for a 100M bit/sec uplink. The switch costs $1,195, which translates into less than $50 per port.*

Allied Telesyn's AT-3726 *switch does not require user configuration.*

The AT-8116 is a 16-port, 10M/100M bit/sec switch. This device costs $2,195, or $137 per port. The switches can be managed via SNMP.

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■ **Microsoft Corp.** *last week predicted that earnings for the company's third fiscal quarter, ending March 31, will exceed Wall St. expectations. Analysts expected Microsoft to earn 44 cents per share for the quarter, but Microsoft Chief Financial Officer Greg Maffei expects the company to top that estimate by at least 4 cents. Maffei said sales of all major product lines are strong around the world, except in Asia.*

■ **Network Associates, Inc.** *last week said it plans to buy help desk product vendor* **Magic Solutions, Inc.** *in a cash deal worth $110 million.*

Network Associates said it will continue to sell its existing McAfee Total ServiceDesk help desk software and Magic Solutions' SupportMagic/SQL offering for now, but eventually will combine them. The integrated product will feature a unified data model and user interface and is expected to be released by year-end.

Travel service embarks on NC journey

Canadian company buys into IBM Network Station 1000s and Java technology.

By John Cox
Mississauga, Ontario

A Canadian travel service is betting that network computers (NC) will make its travel agents more valuable to customers, even in this age of Internet-based self-service.

TravelPlus' new Online 4Travel network, which is based on IBM Network Station 1000s, Java applications and Web servers, will give affiliated agents access to much more information than they can get from SABRE and other legacy reservation systems. Using Web browsers, agents will be able to access fresh data from hotel chains and car rental agencies as well as take advantage of special promotions negotiated by TravelPlus with tour wholesalers.

Today, some 600 independent agents affiliated with TravelPlus use aging Windows PCs with terminal emulators to connect to airline reservation systems. The agents are limited to the information SABRE gives them via their terminal screens, and response time can be slow.

"We needed to start investing in a technology that would let the agents use [new] tools that would make them more productive and competitive," said Peter Rooney, chairman and CEO of TravelPlus, a division of Points North Digital Technologies, Inc., of Saskatoon, Saskatchewan. "Travel agents will no longer be just order takers, but rather, salespeople."

NCs, and possibly NetPCs or other managed PCs, should make the network and applications easy to manage.

"We wanted to use thin clients because we really wanted to control the network and lower the cost of ownership on the desktop," said Les Cantin, chief technology officer for Points North.

For example, instead of having to manually install new or updated applications on each PC, Cantin said the firm will be able to refresh applications once on a central server. Changes then will be replicated to servers at the agencies.

TravelPlus will host a Java-based booking application, probably on an IBM RS/6000, at its central site. This server will be linked to a DB2 database, which will store customer and transaction data. The central site also will feature a Web server that will host inventories of rental cars and details about specific hotels. It also will support collaborative applications so that agents can communicate with each other.

Each agency site will have an IBM AS/400 as a local server. Lotus Development Corp.'s Notes and Domino technology will be used to replicate information between the central server and the agency servers, where the information will be stored in local DB2 databases. The travel agency AS/400s also will act as proxy servers, storing the Java booking application locally for better performance.

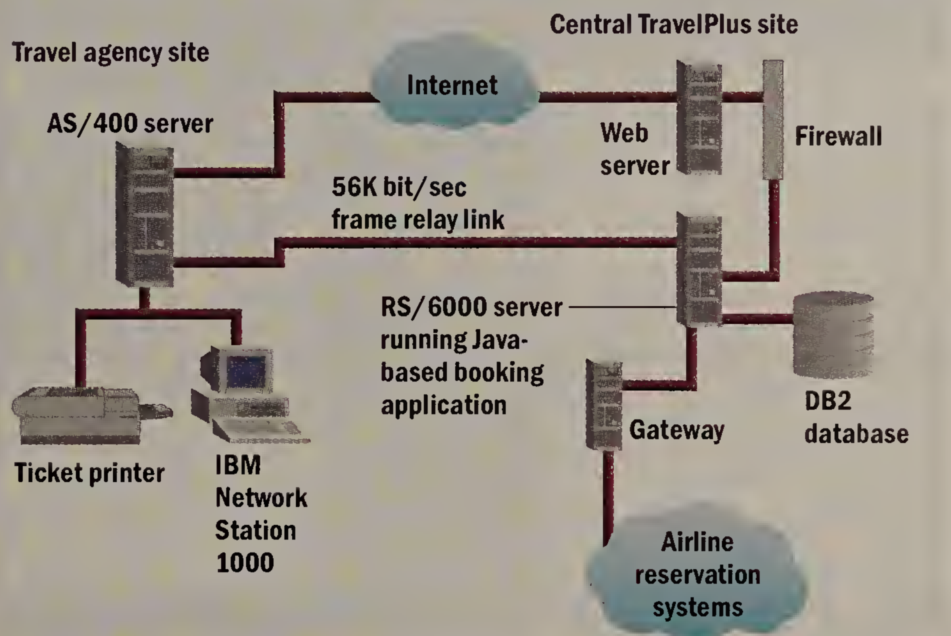
Agents will have access to the central booking application via leased 56K bit/sec lines, while the agents will gain access to the Web server via the Internet.

The Network Stations will display the Java application's user interface within a browser. Via a gateway at the central site, the agents' Java application will be able to connect to SABRE and other systems.

TravelPlus will begin testing its new network in April and is scheduled to start rolling it out in May. ■

No reservations about NCs

TravelPlus is rolling out IBM Network Station 1000 NCs to give travel agents access to a Java-based booking application and assorted Web-based applications. Today, agents use PCs to access traditional airline reservation systems.



Proginet security software revokes passwords

By Scott Lajoie
Garden City, N.Y.

Proginet Corp. last week introduced a new edition of its network security software that makes sure employees' access to networked computers is terminated when employees leave a company.

SecurPass Enterprise is designed specifically for those companies with both Windows NT and mainframe systems. The software maps employee computer access accounts across these systems, and can revoke user access rights as soon as access to either a mainframe or NT server is shut off.

"When John Smith gets fired, nobody knows what he had access to, let alone what his [user ID name] was on certain computers," said Joe Mohen, founder and chairman of Proginet, a company best known for its file transfer software. "There is a crucial time lag when the network administrator is scratching his head trying to figure out what servers this person was able to get into."

Proginet's software runs on mainframes as well as NT servers that house the main NT security directory, called the Primary Domain Connector (PDC). When an employee leaves the company, a remote procedure call is sent from the PDC to the rest of the servers on the NT network and the mainframe.

The software definitely fills a need at large companies, said Bhuwan Srivastava, an analyst at Ernst & Young LLP who has tested the product.

"Companies start losing track of passwords, and accountability becomes an issue," he said.

Srivastava stress-tested the product at the 10,000-user American International Group, a large insurance company in New York. He used SecurPass Enterprise to revoke passwords and found the software worked without any major problems.

The new software is expected to cost about $15 per user and should be available by the end of next month.

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- ● **A SecurPass overview**
- ● **NT security tips from columnist Dave Kearns and from other sources around the 'Net**

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Novell previews final NetWare 5 beta

By Christine Burns and Paul McNamara
Salt Lake City

Novell, Inc. last week emphasized network management upon unveiling its final NetWare 5 beta release.

The new NetWare 5 beta software's primary enhancement is a program called ConsoleOne that will enable network administrators to manage entire NetWare environments via one graphical interface. Formerly code-named Houston, ConsoleOne is a server-side Java program for housing NetWare administrative tools built by Novell and third-party developers.

Novell focused the first two NetWare 5 beta releases, which rolled out in October and January, on helping customers migrate cleanly from the IPX protocol to IP.

Novell next month will issue its new beta software to 150,000 users. In addition to ConsoleOne, the software will come with an enhanced version of Novell Directory Services (NDS). This version of NDS will give administrators more granular control over network access rights, allow for better replication of directory data over WAN links, and speed up directory information queries.

Beta 3 also includes several new server installation programs as well as tools for easing the migration from NetWare 3.X and 4.X networks to NetWare 5 nets. Additionally, the new beta release has built-in support for Lightweight Directory Access Protocol 3.0, which provides LDAP clients with secure access to NDS information. Until now, Novell has only supported LDAP 2.0 via an add-on product.

Customers impressed

BrainShare '98 attendees were uniformly enthusiastic about NetWare 5. In particular, attendees gave ConsoleOne good reviews.

"[ConsoleOne is] one of the best products that I've seen here," said Flavio Goncalves, owner of Virtual Office, LTDA, in Brazil. Goncalves said he is looking forward to performing multiple tasks, such as setting up a remote server and defining users in an NDS tree, from the same management console interface.

Another user was impressed with a new NDS feature that will allow administrators to easily delegate authority for management tasks, such as password administration.

"The ability to [designate] a password manager, or any other kind of manager that you want, frees up the network administrator to do the kinds of things that network administrators ought to do," said Pete Doak, an associate professor of technical industrial education at the College of the Mainland, in Texas City, Texas. NT provides nothing comparable, he said.

Overall, Doak sees the NetWare 5 upgrade as a strong weapon Novell can use to fend off Microsoft Corp., as the Redmond, Wash., software company tries to use NT to invade NetWare shops.

"From what I have seen, [NetWare 5] looks really promising," Doak said.

Novell officials said the company is on track to ship the final version of NetWare 5 by the end of the summer.

Interested customers can register at www.novell.com/netware5/ to receive NetWare 5 Beta 3 CDs. The CDs cost $20 each.

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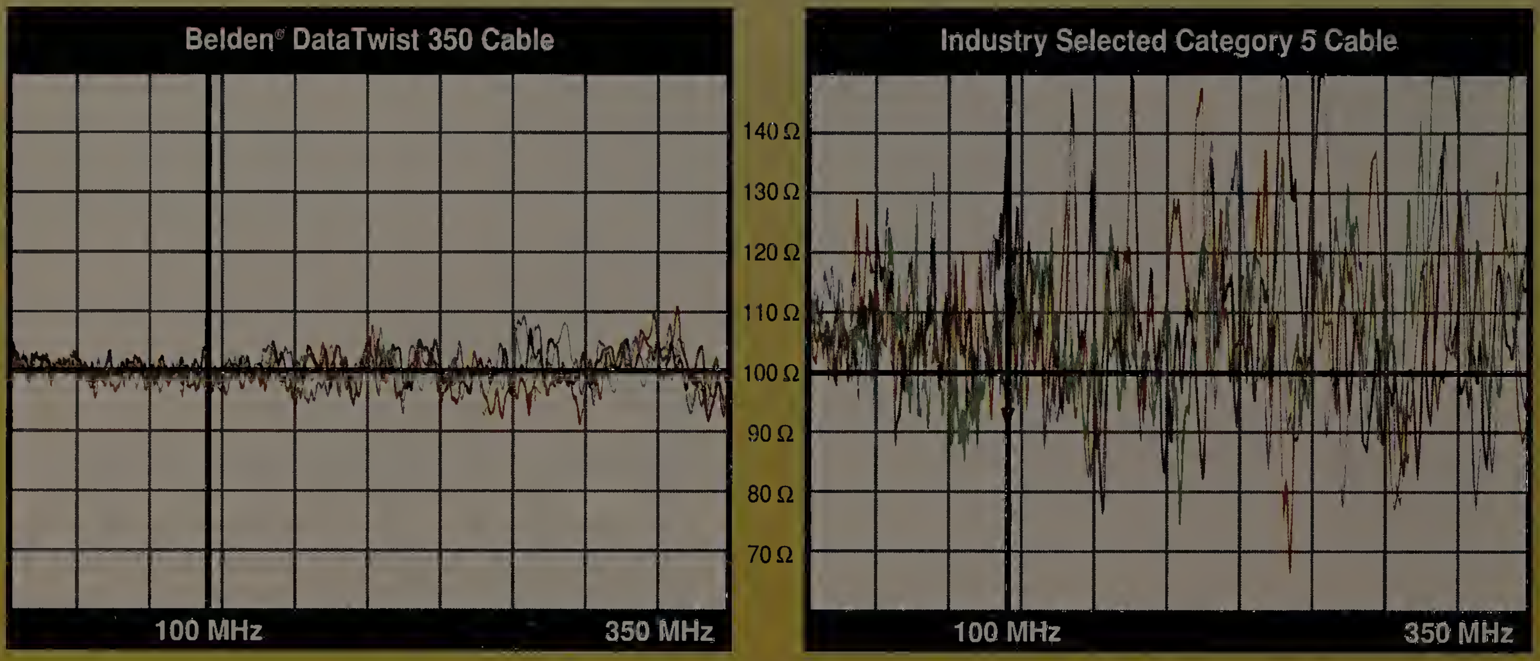

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WIRED WINDOWS

A Novell BrainShare '98 dump

I spent last week in beautiful Salt Lake City attending Novell's BrainShare '98 (and I apologize if you tried to e-mail me on the BrainShare '98 network — I gave the wrong user ID in last week's column). While I'm sure you've already read the reports based on last week's announcements, I'd like to talk about impressions rather than hard news.

Novell CEO Eric Schmidt's opening keynote speech was a far cry from those I witnessed Bob Frankenberg and Ray Noorda deliver at BrainShares past. Those were like typical rah-rah pep rallies and had the aura of preaching to the converted. In contrast, Schmidt seemed to know that most members of his audience were not diehard NetWare fanatics but rather on the fence about which network operating system to buy next.

His speech was an earnest attempt to convince developers, network administrators and consultants that NetWare — and Novell — were still viable in an increasingly NT-centric world. There were few new technology announcements or glitzy demos. Rather, the address was about consolidating Novell's strengths, leveraging Novell Directory Services and creating a heterogeneous network.

All in all, it was a successful presentation. I, for one, came away convinced that under Schmidt, Novell has regained a sense of direction, and a sense of where it fits in today's technology world.

Among the few new announcements, the one I felt had the greatest potential was news that Oracle 8 would ship as part of NetWare beginning this June. Not only will Oracle 8 ship with every box of NetWare 5, but even before that, with NetWare 4.11 (or IntranetWare). It's an announcement I've been waiting for since 1991 — when there were rumors — and I don't understand what took so long. NetWare has been and continues to be the best Intel-based platform for Oracle software, which continues to be the best relational database management system.

Dave Kearns

Since many copies of NT Server are being sold simply as a platform for SQL Server, the Novell-Oracle alliance gives you a choice. After all, many of the applications you want to run can use either SQL Server or Oracle. And even though Oracle for NetWare has been available for four years, many users have been afraid to go with it for business-critical applications because of the dough required just to test the combination.

In future columns, we'll look more closely at some of the other Novell technologies discussed, such as NDS for NT, ZENWorks and Border Manager.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the week

Novell has finally moved its free support (formerly NetWire, now the Novell Support Connection) off CompuServe and onto the World Wide Web. Using forum software from Proxicomm, the support forums are available through a Web browser or a Network News Transfer Protocol newsreader. You will have to use a browser to register (but the service is free) at http://support.novell.com/pforum/. After that, you can use any standard newsreader for faster access.

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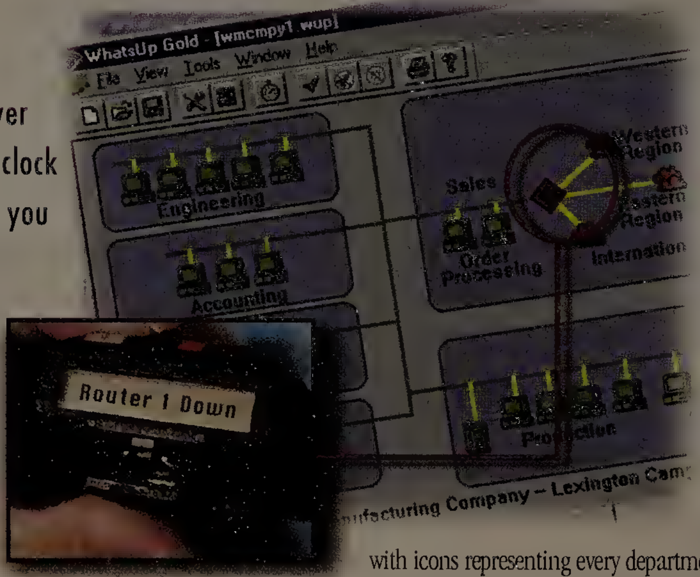

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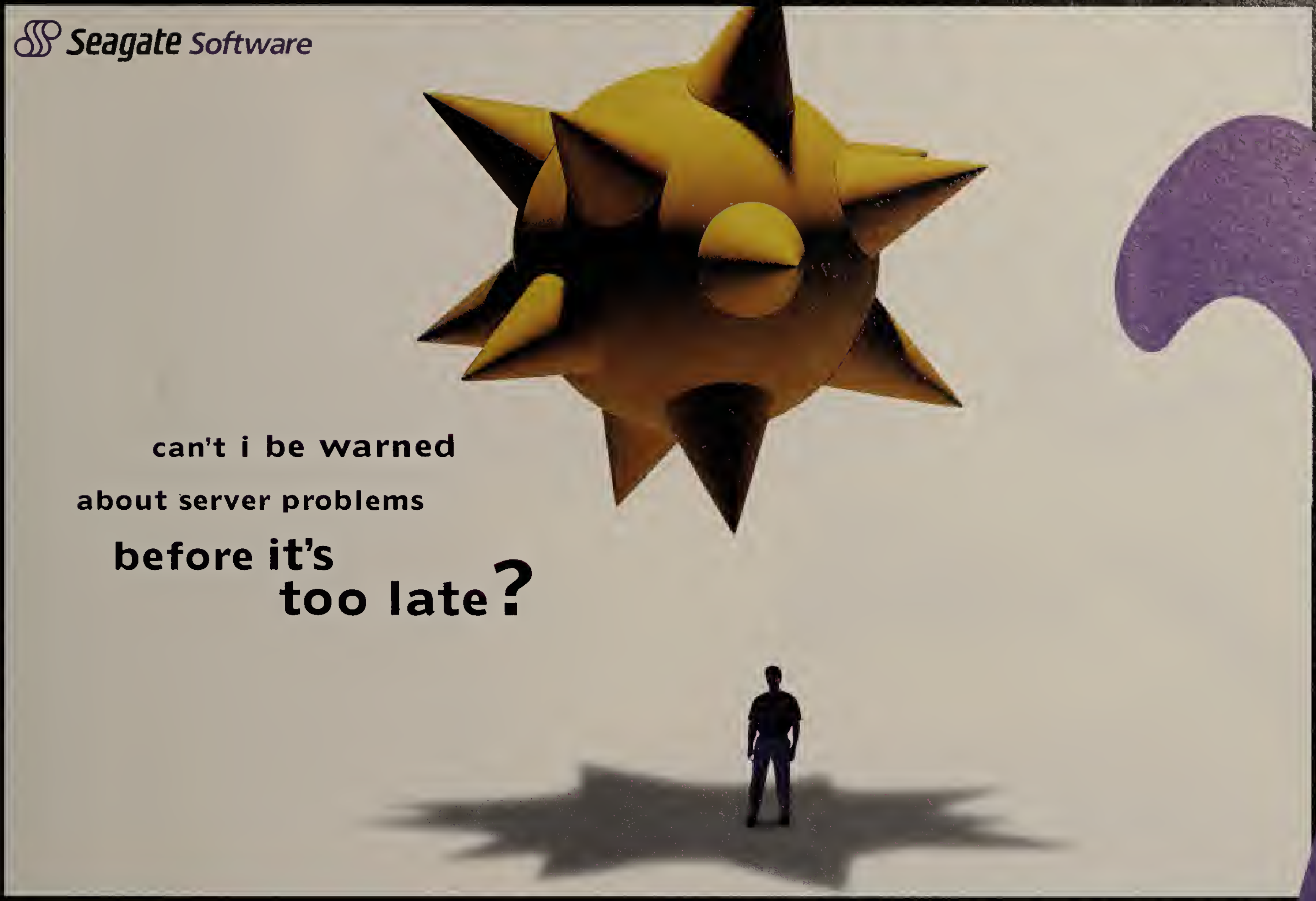

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Briefs

Xircom, Inc. *this week announced* **REALPort Ethernet 10/100+ Modem 56,** *a Type III PC Card for laptops that can make modem connections to phone lines or 10/100 Ethernet connections to LANs. The card supports ties to landline phones or cellular handsets.*

The REALPort Ethernet 10/100+ Modem 56 will ship May 15 and will cost $379.

© Xircom: (800) 438-4526

Netaccess, Inc. *last week introduced Instant RAS-8A (IRAS-8A),* **a four-port Basic Rate Interface ISDN card** *that can terminate ISDN and 56K bit/sec calls. With IRAS-8A and 56K bit/sec modems in general, a remote dial-up user can send data at only 33.6K bit/sec. But it can receive downloads faster than 52K bit/sec if the downloading modem is connected to a digital link such as ISDN. IRAS-8A also supports calls made by slower modems. The cards can handle eight simultaneous modem calls. A second four-port card, IRAS-8, supports ISDN only. The cards are designed for network servers running Microsoft Windows NT BackOffice Small Business Server. IRAS-8A costs $3,499 and IRAS-8 is $2,499.*

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Netaccess' IRAS-8A *modem/ISDN card for servers*

Bay Networks, Inc. *last week said it is shipping the* **Extranet Switch** *4000 and 2000 products, which were obtained through the acquisition of New Oak Communications in January.*

The Extranet Switch 4000 is targeted at large enterprises with 200 to 2,000 simultaneous remote users. The Extranet Switch 2000 is aimed at businesses with 50 to 200 concurrent remote users.

© Bay: (508) 670-8888

New Cisco executive details aggressive SNA plans

Frank Maly wants to double the number of Cisco SNA/IP routers and Webify the mainframe.

Q&A

Frank Maly is familiar with both sides of the SNA-IP war. Maly is the new marketing leader of Cisco Systems, Inc.'s InterWorks Business Unit [IBU]. Before joining Cisco, he worked with IBM in Australia as an SNA engineer. Prior to his promotion in February, Maly was senior manager of technical marketing at IBU. He makes no bones about his goal — to double the number of SNA/IP routers on the market.

Cisco *is always paranoid about competitors, Maly said.*

Maly recently chatted with *Network World* Staff Writer Marc Songini about Cisco's views on the competitive network landscape.

What do you think of the state of your competitor, IBM's Networking Hardware Division [NHD]?

They've basically been following, and they are still following even to this day. They announced the [channel-attached] 2216 router three years after we came out with a channel-attached router.

Their greatest weakness is obviously that they haven't had a good migration strategy for customers moving from SNA to IP. IBM was and is more concerned with fighting the SNA vs. IP battles.

In fact, IBM and Bay [a couple of years ago] made negative statements about Cisco's channel-attached strategy, stating that they could see no need for channel interfaces on routers. Now both IBM and Bay promote their own channel-attached router/switch solutions. NHD lagged behind.

Does IBM give you trouble sleeping at night?

I basically see the majority of IBM as complementary to Cisco. Certain parts of NHD we compete with, but the way I look at it is the way the customer does — they would tell you they'd love to see IBM and Cisco get together. Maybe even IBM and Cisco and Microsoft [Corp.]: IBM would be the mainframe and apps king, Cisco the networking king, and Microsoft the client and server king.

Cisco is always paranoid about all competitors — even start-ups. We never sit back on our laurels.

How will you be different from your marketing predecessor, who was a visible, vocal proponent of the IBU?

My predecessor, Nick Francis, was responsible for promoting and educating the marketplace about the SNA-to-IP migration. His job was convincing data center people that IP was viable. It was a sales job, really — selling the idea to customers and end users.

I will be focusing more on the implementation of the ideas — executing the migration strategy. The SNA-to-IP battle is not the issue. Right now the current job is not answering the question, 'Will this [IP] work?' but, 'How do I implement this network scaling to thousands of nodes?' My job is to help the industry and salespeople and help our third parties to implement these things quickly and efficiently and start exploiting the tools.

Some people are saying Cisco is starting to look a lot like another IBM.

Certainly Cisco is growing rapidly as a company. However, Cisco is very focused on customers. For example, look at [Cisco CEO] John Chambers. Recently he formed lines of business, the ISP line of business, the enterprise line of business. He's

See **Maly,** *page 30*

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Nexabit provides a peek into terabit switch/routers

By Jim Duffy
Westborough, Mass.

High-speed router start-up Nexabit Networks, Inc. last week offered a glimpse of the terabit switch/router the company hopes to ship this fall.

The company is building a router that can support 6.4 terabit/sec of switching capacity. This bandwidth will help scale the Internet and enable users to implement large private intranets, real-time voice over IP and other new applications, Nexabit claimed.

The company does not have an official name for its new box but refers to it as the multiterabit switch/router. The initial system will support up to 16 10G bit/sec OC-192 links or 64 2.5G bit/sec OC-48s over Synchronous Optical Network (SONET) and wavelength division multiplexing, said Gene Wahlberg, Nexabit senior vice president of sales and marketing.

A single chassis — which holds 16 one-port OC-192 and four-port OC-48 line cards — can scale up to 6.4 terabit/sec. This throughput is achieved through the use of four 1.6G terabit/sec modules, Wahlberg said. Separate CPU boards handle route processing and then download route tables onto each line card. The design is intended to increase throughput.

Packet delay through the switch fabric is no more than 3 microsec, he said.

For quality of service, the Nexabit switch/router supports eight priority queues per interface for high-performance multicasting and constant bit rate-type service for IP traffic, Wahlberg said.

The switch/router also permits simultaneous switching of frames and cells, he said.

Analysts said products such as Nexabit's will appeal to Internet service providers looking to offer IP-based multiservice applications to users and those who are already approaching the performance limits of Cisco Systems, Inc.'s 12000 Gigabit Switch Router and Ascend Communications Corp.'s GRF 1600.

"Not only is it applicable to the new IP-based phone companies, like Qwest and Level 3 Communications, but at some point I think you'll see the MCIs, Sprints and AT&Ts of the world interested in these products," said David Passmore, president of the NetReference, Inc. consultancy, in Sterling, Va. "The speed [they] need is OC-48 to OC-192."

Nexabit will have lots of company in this market, including fellow start-ups Argon Networks, Inc., Avici Systems, Inc., Juniper Networks, Inc. and Pluris, Inc. (*NW,* Jan. 19, page 20).

Wahlberg did not disclose pricing for the multiterabit switch/router.

© Nexabit: (508) 898-9900

Nexabit's terabit switch/router features

- Support for 16 OC-192 or 64 OC-48 links
- Hardware capable of forwarding 200 million packet/sec
- No more than a 3 microsec delay through the switching fabric
- 200,000 routes per line card
- Eight priority queues per interface

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Cisco products to fuse voice with IP networks and fax services

By Jim Duffy
San Jose, Calif.

Cisco Systems, Inc. last week unveiled enhancements to its routers and switches that will let users meld voice traffic onto IP data networks.

At the same time, Cisco rolled out the Cisco 2600 line of access routers that feature support for voice and fax (*NW*, March 23, page 8). The 2600 line is targeted at branch offices.

"Cisco is not only adding multiservice capabilities to the enterprise but they are also pushing it all the way to the branch," said Lisa Allocca, senior consultant at Renaissance Worldwide, Inc., a Newton, Mass., consultancy. "And they are doing it at a very attractive cost point."

The Cisco 2600 *has one or two Ethernet, voice/fax, WAN interface and sync/async serial cards.*

Those cost points may not last, though, as users fill out their networks with voice/data gear from Cisco and other vendors, Allocca noted.

For now, however, Cisco unwrapped the Universal Switching Module (UXM) for its StrataCom IGX WAN access switches, and a new voice-management application for its 3600 series routers and AS5300 dial-access servers. The management application also works with the new 2600 access router.

The UXM is an ATM User-to-Network and Network-to-Network Interface. It lets users add ATM to the existing frame relay, circuit data, and voice switching and transport capabilities of the IGX.

The UXM comes in three flavors: two- or four-port OC-3, three- or six-port T-3/E-3, or four- or eight-port T-1/E-1.

The UXM provides NxT-1/E-1 inverse muxing, ATM traffic management, available bit rate service and buffering for 128,000 cells per module.

The UXM costs $16,000 to $28,000, depending on speeds and the number of ports.

Managing voice

For voice management, Cisco unveiled the Cisco Voice Manager application. Cisco Voice Manager is a Java-based application, which means it can ostensibly run on any platform, including Unix and Windows NT.

The software enables users to configure voice-over-IP interfaces and assign phone numbers to IP addresses. The application also monitors voice quality on each call and measures delay, packet loss and type of service parameters.

Cisco Voice Manager also provides call detail records, call volume reports and active call reports. The application costs $2,995 to $4,995, depending on managed device.

The Cisco 2600 line consists of two models, the 2610, which supports one Ethernet port, and the 2611, which sports two Ethernet ports. They range in price from $2,700 to $7,500.

The UXM, Voice Manager and 2600 boxes will be available in April.

✆ Cisco: (408) 526-4000

Maly

Continued from page 27

also focused on customer support and links it directly to our performance. He monitors our success on customer satisfaction. When I began at Cisco, the IBU consisted of approximately four people. Now there are 300.

How do you view the mainframe's role in the future?

There is a large amount of corporate data that currently sits on mainframes. What's changing is that mainframes were typically private resources. Now they're becoming more public. They've become attached to the Internet and opened up the world.

What is the future role of SNA?

Most wouldn't have predicted [that] SNA would have declined so quickly. I believe SNA will continue to decline, but I don't think it will be phased out completely. SNA has declined faster over the past year or so, and IP's acceptance is accelerating. But don't forget that customers have large investments in SNA-centric mainframe applications. Some of these applications require SNA in at least a small part of the network. I feel that SNA will still be around to address the legacy applications, but new applications will be IP-centric.

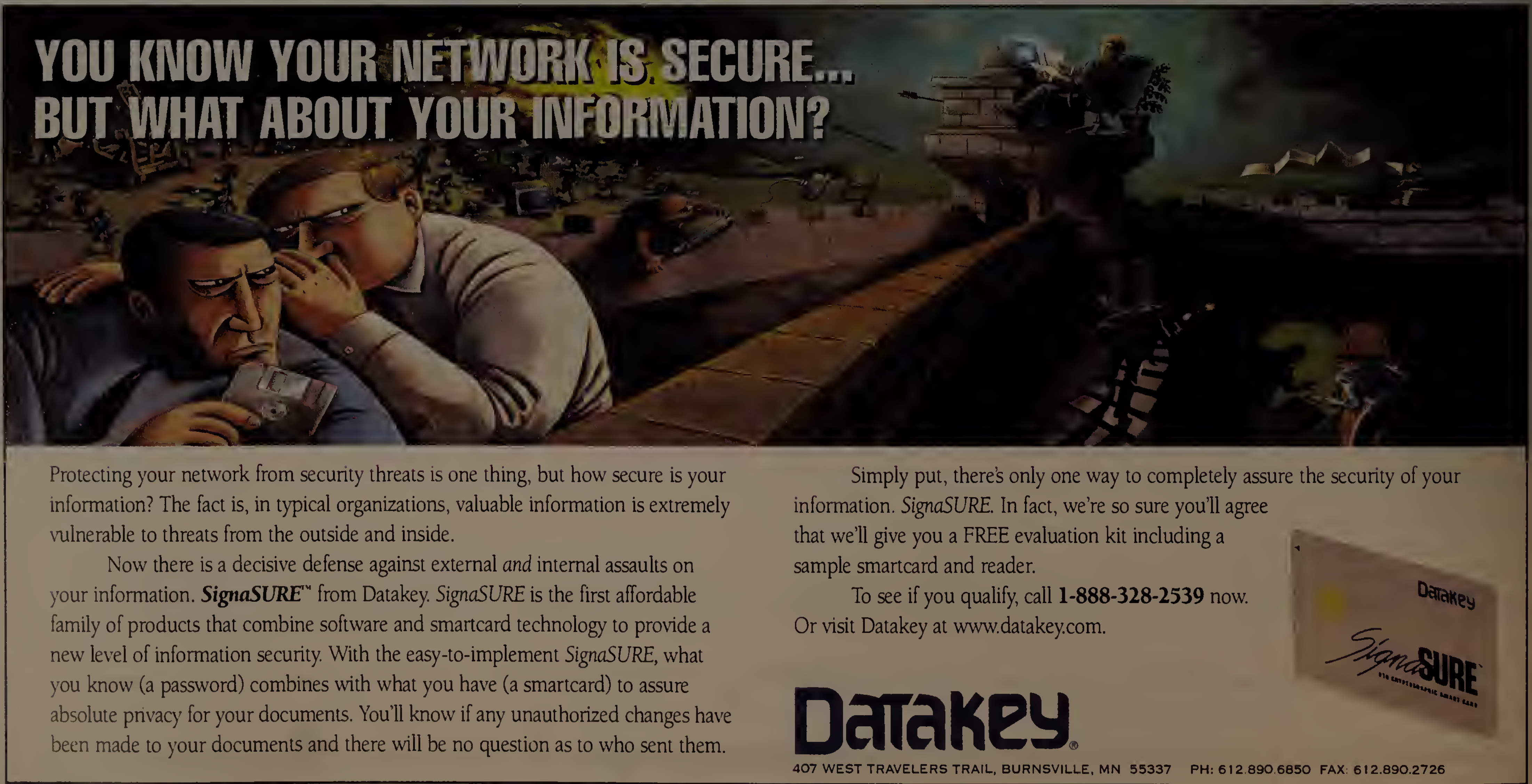
Is Cisco more than a hardware company?

Generally, a lot of people consider Cisco to be a hardware company, and we do produce a lot of hardware. But what's interesting is that we have a large amount of investment in software. To give you an idea, take some voice-type companies that are considering adding IP functionality into some of the high-end switches. Feature-rich IP software is a significant investment, and we come to it with 10 years' worth of software development.

That job cannot be replicated overnight. In the past 10 years, there has been a lot of coding done for IOS [Internetworking Operating System]. It would take three or four years for someone to catch up with us.

What can users expect in the future from Cisco?

Web enablement of the mainframe, lower prices for channel-attached routers, and we will be going after the IBM sysplex market with the CIP [Channel Interface Processor]. ■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1 What is the principal business activity at your location? (check one only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/ Petroleum Refining/Agriculture/Forestry)
12. ☐ Government (Federal/State/Local)
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consulting (Independent)*
16. ☐ Carriers/Interconnects
17. ☐ Internet Service Provider (ISP)
18. ☐ Manufacturing (Computer/Communications/OEM)
19. ☐ Resellers of Computer/Network Products (VARs, VADs)
20. ☐ Systems/Network Integrators*
21. ☐ Distributors (Computer/Communications)*
22. ☐ Other *(please specify)*______________

***Please complete form based on largest client.**

2 What is your job function? (check one only)

NETWORK IS MANAGEMENT:

1. ☐ Network Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS, IT, MIS, CIO, Systems Management
5. ☐ Internet/Intranet Management/Webmaster
6. ☐ Engineering Management
7. ☐ Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management)
8. ☐ Consultant (Independent)
9. ☐ Other *(please specify)*______________

3 What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please print the appropriate number code in the box next to each product category. Please complete ALL categories A-M.)

9. $100 Million or More
0. $50 Million to $99.9 Million
2. $25 Million to $49.9 Million
3. $10 to $24.9 Million
4. $1 to $9.9 Million
5. $100,000 to $999,999
6. $50,000 to $99,999
7. Under $50,000
8. None of the above

A ☐ Large Systems *(Mainframes/Minis)*
B ☐ Desktops *(Micros/Laptops/Workstations)*
C ☐ Servers
D ☐ LANs
E ☐ WAN Equipment
F ☐ Carrier Services
G ☐ Internetworking
H ☐ Internet
I ☐ Intranet
J ☐ Remote Access
K ☐ Peripherals
L ☐ Software
M ☐ Service/Support

4 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+ 2. ☐ 50 - 99 3. ☐ 20 - 49 4. ☐ 10 - 19 5. ☐ 2 - 9 6. ☐ 1 7. ☐ None

5 What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (Check one box in each column)

SERVERS At Location A		SERVERS Entire Org. B	CLIENTS At Location C		CLIENTS Entire Org. D	LANS At Location E		LANS Entire Org. F
☐	1. 50,000+	☐	☐	1. 50,000+	☐	☐	1. 50,000+	☐
☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐
☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐
☐	4. 100 to 999	☐	☐	4. 100 to 999	☐	☐	4. 100 to 999	☐
☐	5. 50 to 99	☐	☐	5. 50 to 99	☐	☐	5. 50 to 99	☐
☐	6. 10 to 49	☐	☐	6. 10 to 49	☐	☐	6. 10 to 49	☐
☐	7. 1 to 9	☐	☐	7. 1 to 9	☐	☐	7. 1 to 9	☐
☐	8. none	☐	☐	8. none	☐	☐	8. none	☐

6 What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)
1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)
1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve
4. ☐ Evaluate
5. ☐ Determine the need
6. ☐ None

7 What is the estimated number of employees at your location/in entire organization? (check one in each section)

A. At your location:
1. ☐ Over 20,000
2. ☐ 10,000 - 19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

B. Entire organization:
1. ☐ Over 20,000
2. ☐ 10,000 - 19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

8 Please indicate the products/services that you are currently involved in purchasing or plan to purchase: (Check ALL that apply)

A. Currently involved in purchasing **B. Plan to purchase**

INTERNET/INTRANET

A B
☐ 01. ☐ Internet Services
☐ 02. ☐ Firewalls/Security/Encryption
☐ 03. ☐ Internet Web Servers
☐ 04. ☐ Intranet Web Servers
☐ 05. ☐ TCP/IP Software
☐ 06. ☐ Management/Monitoring Software
☐ 07. ☐ Push Technology
☐ 08. ☐ Web Browsers
☐ 09. ☐ Intranet Applications/Groupware
☐ 10. ☐ Search/Retrieval Products (web crawler)
☐ 11. ☐ Internet Development Tools (JAVA, ActiveX, etc.)
☐ 12. ☐ Electronic Commerce Tools
☐ 13. ☐ Internet Telephony

LOCAL-AREA NETWORKS

A B
☐ 14. ☐ Local-Area Networks
☐ 15 ☐ Network Operating System Software
☐ 16. ☐ Servers
☐ 17. ☐ Print Servers
☐ 18. ☐ ATM Switches
☐ 19. ☐ Token-Ring Switches
☐ 20. ☐ Ethernet Switches
☐ 21. ☐ Fast Ethernet
☐ 22. ☐ Gigabit Ethernet
☐ 23. ☐ IP Switches
☐ 24. ☐ LAN Storage/Backup
☐ 25. ☐ Optical LAN Storage/Backup
☐ 26. ☐ Disk LAN Storage/Backup
☐ 27. ☐ Tape LAN Storage/Backup
☐ 28. ☐ RAID LAN Storage/Backup
☐ 29. ☐ Network Test/Diagnostic Tools
☐ 30. ☐ Cables, Connectors, Baluns
☐ 31. ☐ UPS
☐ 32. ☐ Network Interface Cards
☐ 33. ☐ SNMP Network Management

INTERNETWORKING

A B
☐ 34. ☐ Routers
☐ 35. ☐ Hubs
☐ 36. ☐ Intelligent Hubs
☐ 37. ☐ Stackable Hubs
☐ 38. ☐ Bridge/Router
☐ 39. ☐ Bridges
☐ 40. ☐ Gateways
☐ 41. ☐ Concentrators/Repeaters

COMPUTERS/PERIPHERALS

A B
☐ 42. ☐ Network Computers
☐ 43 ☐ Laptops/Notebooks/Sub-Notebooks
☐ 44. ☐ Micros/PCs
☐ 45. ☐ Minis
☐ 46. ☐ Mainframes
☐ 47. ☐ Workstations
☐ 48. ☐ Printers/Network Printers
☐ 49. ☐ CD-ROM
☐ 50. ☐ Fax/Modem Boards
☐ 51. ☐ Graphics/Multimedia/Audio/Video Boards
☐ 52. ☐ Memory/Chips/Boards/Cards

REMOTE/WIRELESS COMPUTING

A B
☐ 53. ☐ Remote Access Products
☐ 54. ☐ Remote Access Services
☐ 55. ☐ PDAs
☐ 56. ☐ PCMCIA Devices
☐ 57. ☐ Wireless Data Services
☐ 58. ☐ Wireless Data Equipment
☐ 59. ☐ Cellular Equipment & Services

SOFTWARE/APPLICATIONS

A B
☐ 60. ☐ Network Management
☐ 61. ☐ Systems Management
☐ 62. ☐ Security
☐ 63. ☐ Communications Software
☐ 64. ☐ Terminal Emulation
☐ 65. ☐ Operating Systems
☐ 66. ☐ Applications Development Tools
☐ 67. ☐ Database Management/RDBMS
☐ 68. ☐ Groupware
☐ 69. ☐ Workflow
☐ 70. ☐ EDI
☐ 71. ☐ E-mail
☐ 72. ☐ Desktop Video Conferencing
☐ 73. ☐ Imaging
☐ 74. ☐ Suites/Server Suites (Back Office, etc.)
☐ 75. ☐ Middleware
☐ 76. ☐ Document Management
☐ 77. ☐ Site Metering Tools
☐ 78. ☐ Computer Telephony Integration (CTI)
☐ 79. ☐ Data Warehousing

WIDE-AREA NETWORK EQUIPMENT & SERVICES

A B
☐ 80. ☐ Modems
☐ 81. ☐ Asynchronous Transfer Mode (ATM)
☐ 82. ☐ Frame Relay Equipment/Services
☐ 83. ☐ ISDN Equipment & Services
☐ 84. ☐ FT-1/T-1/T-3 Multiplexers/Services
☐ 85. ☐ DSL Services/Products
☐ 86. ☐ SONET
☐ 87. ☐ Inverse Multiplexers
☐ 88. ☐ SMDS
☐ 89. ☐ Diagnostic/Test Equipment
☐ 90. ☐ DSU/CSU
☐ 91. ☐ VSAT/Satellite
☐ 92. ☐ PBXs
☐ 93. ☐ Voice Mail/Response
☐ 94. ☐ Videoconferencing
☐ 95. ☐ Leased Lines
☐ 96. ☐ Switched Data
☐ 97. ☐ Virtual Networks
☐ 98. ☐ Outsourcing/Systems Integration Services
☐ 99. ☐ Education/Training Services

☐ 00. ☐ None of the above (1 - 99)

9 Please indicate the platforms that are currently installed/planned:

(Check ALL that apply) **A. Currently installed** **B. Planned for purchase**

NETWORK PROTOCOLS

A B
☐ 01. ☐ TCP/IP
☐ 02. ☐ IPv6
☐ 03. ☐ SNA
☐ 04. ☐ DECnet
☐ 05. ☐ Novell IPX/SPX
☐ 06. ☐ APPC/APPN/LU 6.2
☐ 07. ☐ NETBIOS
☐ 08. ☐ AppleTalk
☐ 09. ☐ NFS
☐ 10. ☐ Other *(please specify)*______________

LAN ENVIRONMENT

A B
☐ 11. ☐ Gigabit Ethernet
☐ 12. ☐ Switched Ethernet
☐ 13. ☐ Fast Ethernet (100 Megabit Ethernet)
☐ 14. ☐ Ethernet
☐ 15. ☐ ATM
☐ 16. ☐ Token Ring/Token Ring Switching
☐ 17. ☐ IP Switching
☐ 18. ☐ FDDI
☐ 19. ☐ 100Base-T
☐ 20. ☐ 10Base-T
☐ 21. ☐ LocalTalk
☐ 22. ☐ Fibre Channel
☐ 23. ☐ 100vg Any LAN
☐ 24. ☐ Other *(please specify)*______________

NETWORK OPERATING SYSTEM

A B
☐ 25. ☐ Windows NT
☐ 26. ☐ Windows NT/Advanced Server
☐ 27. ☐ Novell IntranetWare
☐ 28. ☐ Novell (NetWare 4.X)
☐ 29. ☐ Novell (NetWare 2.X, 3.X)
☐ 30. ☐ Microsoft (LAN Manager)
☐ 31. ☐ LocalTalk (AppleTalk)
☐ 32. ☐ Banyan (VINES)
☐ 33. ☐ IBM (LAN Server)
☐ 34. ☐ Artisoft (LANtastic)
☐ 35. ☐ Other *(please specify)*______________

COMPUTER OPERATING SYSTEM

A B
☐ 36. ☐ NT Server
☐ 37. ☐ NT Workstation
☐ 38. ☐ Unix/Xenix/AIX
☐ 39. ☐ Solaris
☐ 40. ☐ Windows
☐ 41. ☐ Windows 95
☐ 42. ☐ Windows 97
☐ 43. ☐ DOS
☐ 44. ☐ OS/2/OS/2 Warp
☐ 45. ☐ IBM MVS/VM/VSE
☐ 46. ☐ Digital VMS
☐ 47. ☐ Macintosh
☐ 48. ☐ Other *(please specify)*______________

☐ 49. ☐ None of the above (1-48)

10 Which of the following Servers/Clients do you have installed/planned at your location? (check ALL that apply in each column)

	A. Servers		B. Clients		A. Servers		B. Clients
Power PC	☐	01.	☐	486	☐	07.	☐
Power Mac	☐	02.	☐	386	☐	08.	☐
Mac Other	☐	03.	☐	286	☐	09.	☐
Multiprocessor Servers	☐	04.	☐	Risc	☐	10.	☐
PG/PII	☐	05.	☐	Alpha	☐	11.	☐
Pentium/Pentium Pro	☐	06.	☐	Other	☐	12.	☐

11 Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - Mainframes (Large Scale) Installed/Planned
1. ☐ IBM
2. ☐ Amdahl
3. ☐ Cray
4. ☐ Hitachi
5. ☐ Unisys
6. ☐ Other ______________

B - Minis (Midrange) Installed/Planned
1. ☐ IBM RS6000
2. ☐ IBM AS400
3. ☐ Digital
4. ☐ Tandem
5. ☐ Unisys
6. ☐ AT&T GIS
7. ☐ H-P
8. ☐ Data General
9. ☐ Other ______________

C - Workstations Installed/Planned
1. ☐ Sun Microsystems
2. ☐ Silicon Graphics
3. ☐ Digital
4. ☐ H-P
5. ☐ IBM
6. ☐ Other ______________

12 What is the estimated gross annual revenue of your entire company/institution? (check one only)

01. ☐ $20 billion or more
02. ☐ $10 billion to $19.9 billion
03. ☐ $1 billion to $9.9 billion
04. ☐ $500 million to $999.9 million
05. ☐ $100 million to $199.9 million
06. ☐ $50 million to $99.9 million
07. ☐ $10 million to $49.9 million
08. ☐ $5 million to $9.9 million
09. ☐ $4.9 million or less
10. ☐ None of the above

13 For which areas outside of North America do you have purchase influence? (check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4 ☐ Australia 5. ☐ Middle East 6. ☐ None

B398

Please indicate the names and job functions of other individuals at your location to whom you would like us to send a copy of NetworkWorld.

Name ______ Job Function ______

Name ______ Job Function ______

Name ______ Job Function ______

Name ______ Job Function ______

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Carriers & ISPs

Covering: The Internet • Interexchange and Local Carriers
Wireless • Regulatory Affairs • Voice Equipment

Briefs

■ **ACT Networks, Inc.,** *in Camarillo, Calif., last week announced its* **Service Xchange telephony** *gateway product line. The SX-10 will let users send voice traffic over the Internet or a frame relay network.*

ACT Networks' SX-10 *can handle four dedicated T-1 connections.*

The SX-10 is ACT's first H.323-compliant IP telephony device. The SX-10 can support up to four dedicated T-1 connections.

The device will be available at the end of the second quarter and will be priced from $20,000 to $40,000, depending on configuration. ACT also will roll out the SX-120 and the SX-600. The SX-120 will support up to 96 T-1 ports, and the SX-600 will support up to 480 T-1 ports. Both boxes should be available by year-end.

© ACT: (818) 735-3500

■ **Nortel** *has signed an agreement to acquire* **Aptis Communications, Inc.,** *a Chelmsford, Mass., start-up that is building carrier-class remote access switches. The price tag is $290 million in cash and Nortel stock. Aptis' CVX 1800, currently in beta, is designed to support multiple types of dial-up and dedicated access with what it claims is the industry's highest modem and leased-line port density.*

■ **MCI Communications Corp.** *and* **Siemens Communications Systems, Inc.** *have renewed and expanded their long-standing joint marketing relationship.*

In a new five-year, $2.1 billion deal, Siemens — the No. 3 PBX vendor in the U.S. — will sell a broad line of MCI services, including private lines, frame relay, dedicated Internet access and local telephone service.

NaviSite to marry Internet with public phone net

By Denise Pappalardo

NaviSite Internet Services, Inc. wants to eliminate those annoying busy signals users frequently get when dialing up the 'Net.

The Internet service provider is rolling out a new architecture that will let the company tie the public switched telephone network (PSTN) and IP-based nets via Signaling System 7 (SS7). By tying IP-based nets directly to the PSTN, more users will be able to access the Internet quicker, the company claimed.

Specifically, NaviSite wants to deploy SS7 gateways and Ascend Communications, Inc.'s TNT access concentrators in competitive local exchange carrier (CLEC) facilities around the country. SS7 is a signaling technology that is used to set up and route telephone calls on the PSTN.

Funneling traffic

The SS7 gateway will sit between the access concentrator and a LEC's voice switch. The gateway supports SS7 and will let the access concentrator funnel NaviSite data traffic directly onto the PSTN without having to first go through the CLEC switch. That will free ports on the CLEC switch needed to complete this link today.

The new architecture will let NaviSite offer its new GeoDial.SP service to small and regional ISPs around the country. GeoDial.SP is a wholesale dial-up Internet access service that will let other ISPs offer services in geographic locations around the country where they do not have equipment of their own. Instead, small and regional ISPs will be able to resell NaviSite's service.

Big targets

NaviSite hopes to snatch business away from some of the large Internet backbone providers, such as UUNET Technologies, Inc., PSINet, Inc. and GTE Internetworking, which have a hold on this wholesale market today, said James Winkleman, chief technology officer at NaviSite.

NaviSite in the future also plans to sell a different flavor of GeoDial directly to users.

SS7 gateways will make a real difference in areas such as Silicon Valley, where voice switches are overloaded with Internet access traffic, said Francois de Repentigny, industry analyst at Frost & Sullivan, a Mountain View, Calif.-based consulting firm. LECs and ISPs need a way to free voice ports and to quickly get Internet data traffic to the 'Net, de Repentigny said.

NaviSite is looking at SS7 gateway technology from Hewlett-Packard Co. and Stratus Computer, Inc., Winkleman said.

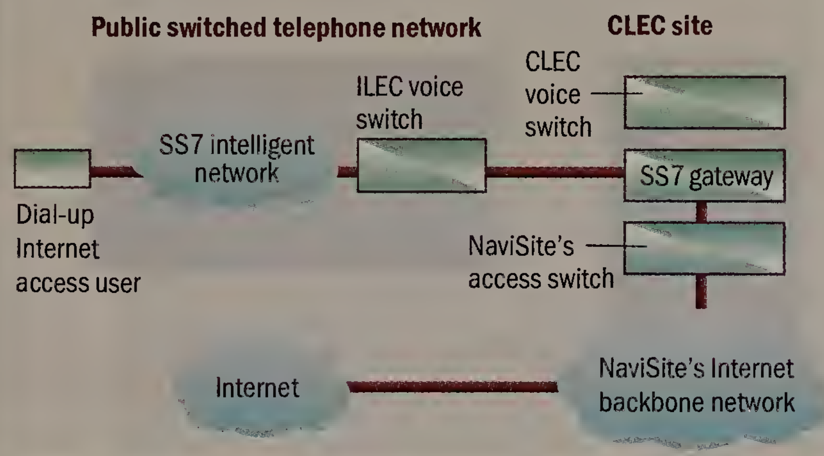
Stratus is working with Ascend Communications, Inc., Bay Networks, Inc., Cisco Systems, Inc. and 3Com Corp. to develop a common interface that will let all access concentrators communicate with an SS7 network.

The GeoDial.SP service will be available next month in southern California. By year-end, NaviSite expects the service will be available to 75% of the country.

© NaviSite: (978) 552-3300

SWITCHING AROUND LOCAL NETWORK BOTTLENECKS

NaviSite is colocating its network access equipment within CLEC facilities. This will let NaviSite connect directly to an incumbent local exchange carrier's (ILEC) voice switch, which will let the ISP receive customer's dial-up Internet traffic directly instead of going through the CLEC's voice switches.

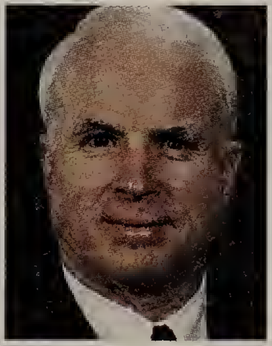


Senator rides to ISPs' rescue

Sen. McCain warns FCC against redefining ISPs as carriers.

By David Rohde
Washington, D.C.

An influential figure has jumped into the fray to stem the growing political pressure that could force Internet service providers to pay into the nation's universal service fund.



McCain: *Bringing ISPs under FCC regulation would be "disastrous" to their growth.*

Senate Commerce Committee Chairman John McCain (R-Ariz.) recently wrote a letter to William Kennard, chairman of the Federal Communications Commission, asking the FCC not to begin regulating ISPs as ordinary telecommunications carriers.

McCain's letter came as ISPs and their customers await a crucial report from the FCC to Congress, due April 10. Among other things, the FCC must tell Congress whether it now considers Internet transmissions tantamount to a basic telecommunications service instead of the "enhanced service."

Such a decision would mean the FCC could begin regulating ISPs in the same way as long-distance carriers. As a result, a portion of ISPs' revenues would be siphoned off into a fund to support universal service, which now includes subsidies for rural telephone lines and other purposes. ISPs have warned that such a move would mean higher Internet access prices.

McCain argued against such a change. He cited deliberations prior to the passage of the Telecommunications Act of 1996 in which House-Senate conferees wrote in language that directs regulators to "preserve the vibrant and competitive free market that presently exists for the Internet." Bringing ISPs under telecom regulation would be "disastrous to the growth and development of [their] services," McCain wrote.

Pressure has been building on Kennard and the other FCC commissioners from other Senate Commerce Committee members. Sens. John D. Rockefeller (D-W.Va.) and Olympia Snowe (R-Maine).

The senators earlier this month wrote Kennard warning that the universal service fund may fall short of the money it needs to pay for E-rate, the school subsidy for network services. The two senators said ISPs should pay their "fair share" of the program along with long-distance carriers.

The two senators also cited projections of the growth of Internet telephony and warned that the resulting decrease in ordinary phone calls could decimate the universal service fund. ■

Get more online:

- An FCC fact sheet and ruling on the issue of whether the FCC should make ISPs common carriers
- Opinions from telecommunications law firms about the topic

6435

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WAN MONITOR

Burning VPN questions answered

We've been traveling the country doing a variety of virtual private network (VPN) seminars and presentations. Interest levels are high as is the amount of confusion on what constitutes VPN services. With that in mind, we thought we'd try to answer a few of the most frequently asked seminar questions.

What is a VPN service?

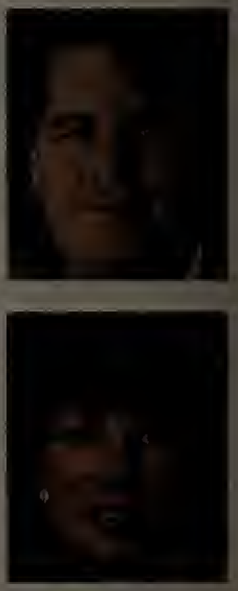
Ask 10 people this and you'll get 10 different answers. TeleChoice believes a VPN consists of a public communications network that uses Internet technologies to deliver information securely to a closed user group.

Notice that with this definition the underlying network can be based on the Internet, a closed private IP net, frame relay, ATM, X.25 or any combination of network technologies. The service can support voice, data or video applications.

Ideally, TeleChoice believes the VPN also should be a managed service that includes a single logon feature enabling access to an integrated directory. The directory, in turn, is tied to a centralized policy management server. This arrangement allows the selection of quality of service (QoS) by call, user, time of day, destination, origin or any other criteria. The QoS is tied to service-level agreements and directly influences the price.

Are VPNs less expensive than other alternatives and, if so, why?

This is a tricky question because there are many ways to evaluate cost. If you compare an Internet-based VPN to frame relay with the same level of support, the Internet-based VPN is likely to be less expensive. If you compare a do-it-yourself VPN with a managed VPN service (based on frame relay, IP or whatever), then you've got to compare the cost of setting up and operating a network operations center (NOC).



Daniel Briere and Christine Heckart

Experts who can build and support those nets are hard to find and expensive to retain. For most mid-size businesses, and a 12-hour NOC will cost $150,000 to $250,000 per year; a 24-hour NOC will more than double that cost. Compare that cost with outsourcing the management of a VPN to a service and you'll probably find big savings.

Where is the industry headed with regard to tunneling?

Tunneling is one component of security. Other components include encryption and authentication. Remember, security is mainly an issue if you use the 'Net as part or all of your backbone. The industry is moving toward Layer 3 tunneling via IP Security (IPSec), an emerging standard that uses software modules to integrate encryption, authentication, key management and tunneling. IPSec's downside is that it only supports IP.

Layer 2 tunneling protocols such as the Point-To-Point Tunneling Protocol, Layer 2 Forwarding and the emerging standard Layer 2 Tunneling Protocol support any protocol. But they require more integration and coordination with the service providers' platform for true tunneling through the network.

Briere is president and Heckart is vice president with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

1998 Seminar Dates and Locations:

April 15	Boston, MA
April 16	New York, NY
April 28	Irvine, CA
April 29	San Francisco, CA
May 13	Houston, TX
May 14	Atlanta, GA
May 27	Chicago, IL
May 28	Dallas, TX
June 23	Philadelphia, PA
June 24	Washington, DC
June 25	Denver, CO

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Frame Relay '98 will help you make sense of all that frame relay has become. This information-packed seminar, taught by Jeff Phillips, a frame relay expert with TeleChoice, Inc., addresses the technology from virtually every angle. In this seminar, we will explore everything from frame relay implementation fundamentals to application specifics and the many areas in between. Hot topics such as network management, voice and SNA transport, carrier and equipment vendor offerings, and interoperability will be covered in this powerful one-day session. New features and services available on the market along with their networking benefits will be addressed along with enhancements coming from industry players in the future.

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1. Explore the inherent benefits of using frame relay
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3. Understand the alternative approaches to running SNA applications over frame relay
4. Understand available network management options and the pros and cons of outsourcing vs. in-house network management
5. Learn how frame relay can interoperate with other networking technologies and why you may want to explore them
6. Learn how to save money by consolidating your voice and data applications over frame relay
7. Analyze the service and pricing differences between the major frame relay providers
8. Learn about new and likely future service and equipment enhancements which could prove advantageous to your networking environment

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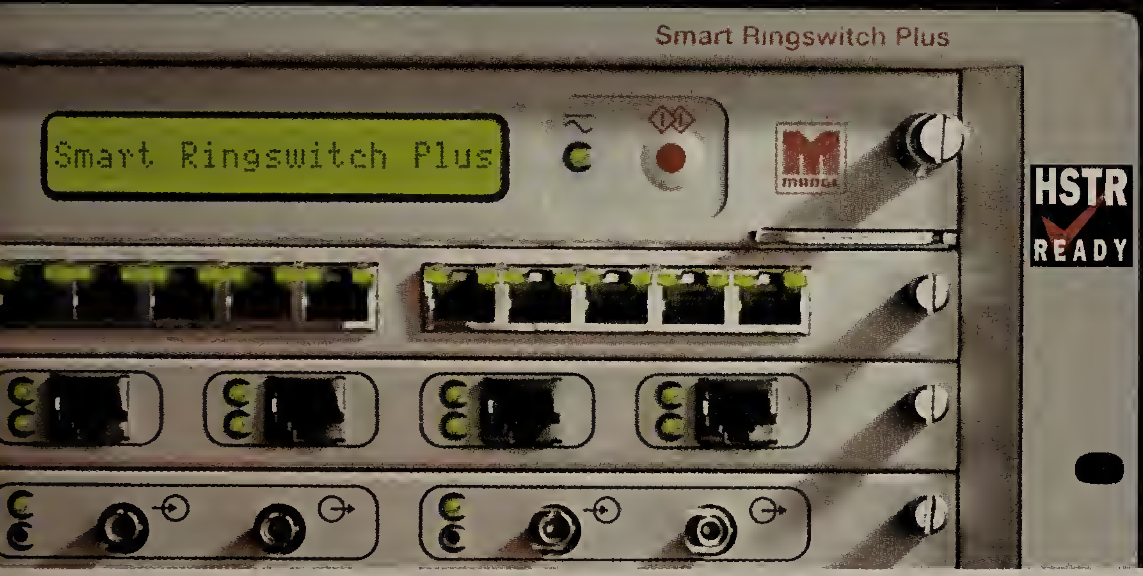

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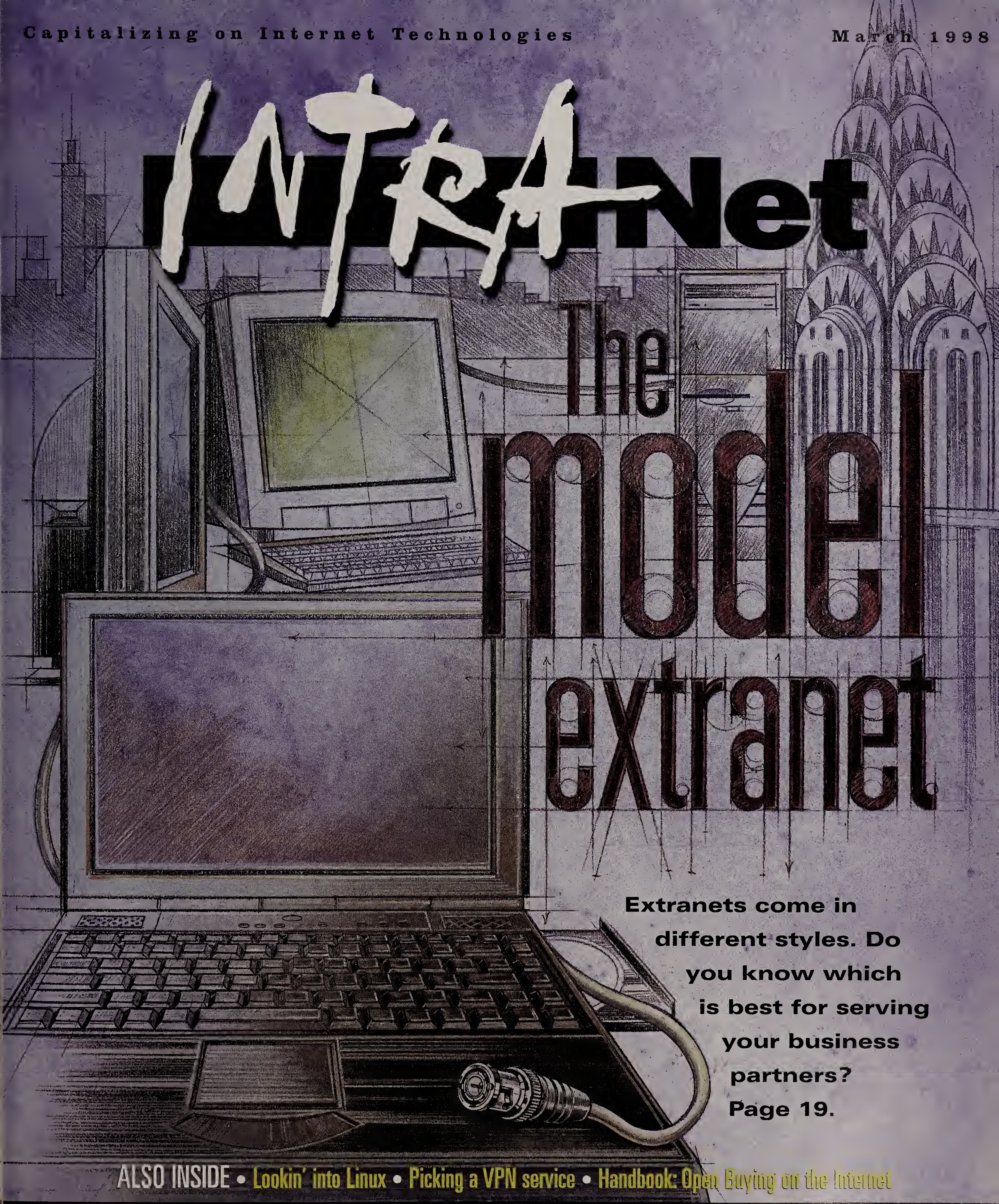
Capitalizing on Internet Technologies

March 1998

IntraNet



The model extranet

Extranets come in different styles. Do you know which is best for serving your business partners? Page 19.

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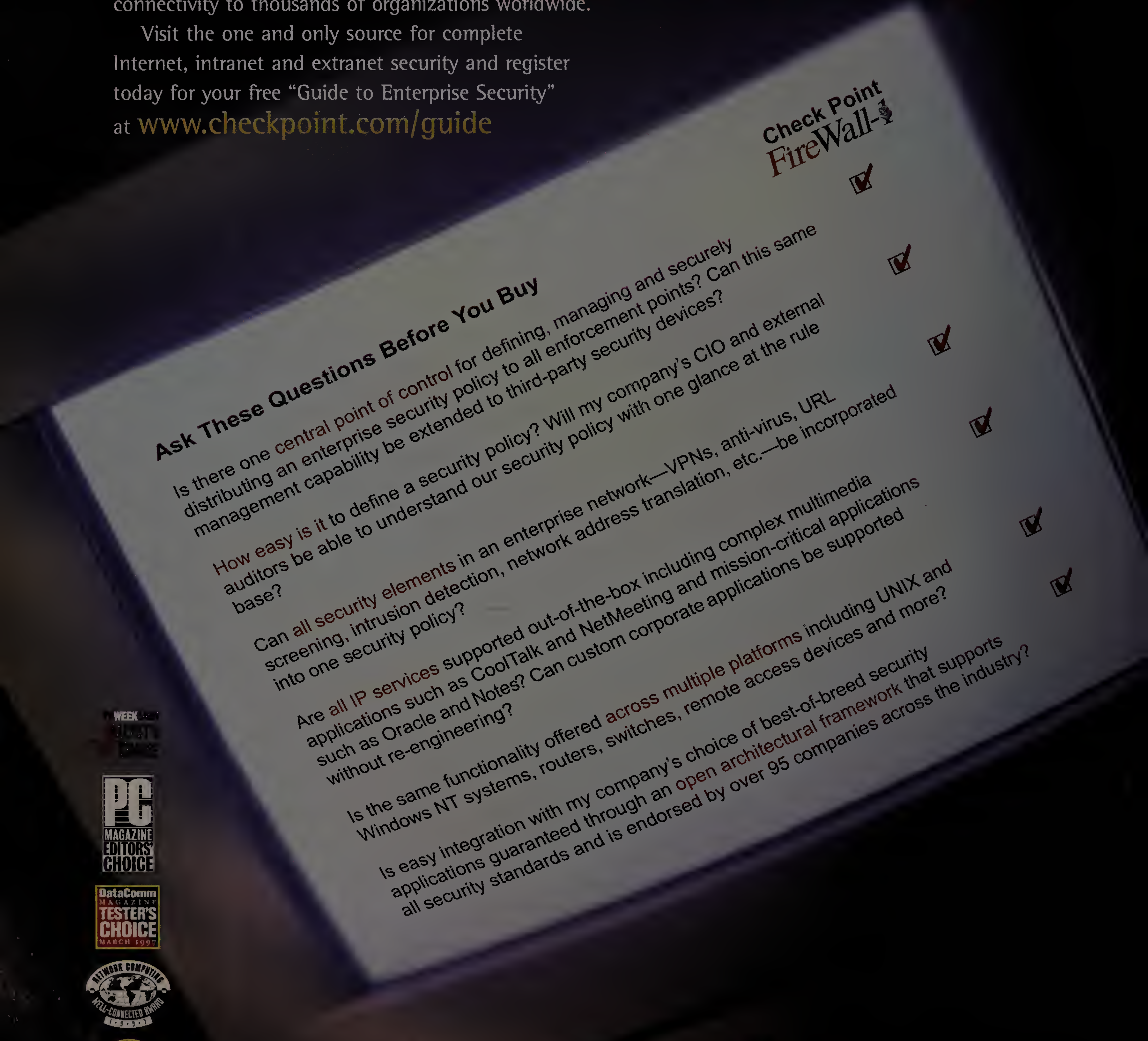

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INSIDE

IntraNet

March 1998
Volume 3, Number 3

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Extranets come in all shapes and sizes, so before you finalize your plans for extending the corporate intranet to outsiders, make sure you understand which type best fits your company's goals. Cover illustration by Linda Richardson.

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Ernst & Young International is taking 75,000 employees at member companies around the globe to the outer limits with its InnerSpace intranet. Once employees enter this proprietary space, they can obtain research data, order software and collaborate with colleagues.

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Here's a look at a variety of software packages that let users schedule meetings and other events right from the company intranet.

Handbook: Open Buying on the Internet 8
The OBI process standard provides a good framework for intranet managers who are looking to take charge of their company's electronic commerce initiatives.

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This month, the doctor helps an intranet developer who is "lost, storm-driven and harried" come to grips with some Web basics.

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From the Editor

Anyone looking for a way to create richer, more intuitive intranet pages ought to be keeping tabs on the Extensible Markup Language (XML).

That assignment won't be easy. The World Wide Web Consortium earlier this month released the XML 1.0 spec as a recommendation, and other XML backers have been busy pledging their support for the standard.

"Push" vendor DataChannel, Inc., for example, spearheaded the creation of the XML Active Content Technologies Council (X-ACT). The 18 X-ACT companies think XML will generate a new class of Web applications, and they want to be in the thick of discussions on how these will happen.

XML also is beginning to creep into products — witness recent announcements by two Industry newcomers, for example. Centraal Corp. has unveiled Real Network System, an XML-based scheme for finding things on intranets and the public Web using familiar words and common language (see story, page 5). And Aeneid Corp. previewed the Intranet Research Assistant, an XML-based tool for collecting and analyzing information off a Web.

Because it lets Web developers create their own tags rather than rely on predefined HTML conventions, XML provides an easy way to customize Web pages and applications for an intranet. And, as we explained in an XML handbook published last June, it also will make intranet data easier to manage because that data will be more self-describing.

As intranet managers, you're expected to keep up with the latest on Internet technologies and standards and figure out which ones might apply to your Web. Learning about XML will be worth your while.

— *Beth Schultz*, executive editor
(bschultz@nww.com)

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Circle Reader Service #9

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insight, humor and other marginalia from planet intranet.

Where do you want to go?

Centraal Corp. aims to take you right there with a new Web navigation service.

Even on a self-contained corporate intranet, URLs can become unending strings of words, letters and symbols that no sane user could ever remember.

Centraal Corp., an Internet start-up in Palo Alto, Calif., plans on washing all the confusion away with a new Web navigation service it announced at the recent Internet World show in Los Angeles. The service, called Real Name System (RNS), lets users work their way across an intranet or the Internet using common words people use in everyday speech.

On an intranet, employees could simply type in "teeth," for example, if they wanted to get to the page dealing with the company's dental insurance plan.

Centraal contends that the Domain Name System, so important for the SMTP e-mail universe, is not practical for HTTP. It's one thing to know that typing www.disney.com will take you to Disney's home page, but quite another to remember that the information you want on Snow White is at www.disney.com/DisneyVideos/masterpiece/shelves/snowwhiteandthe-sevendwarfs/_index.html, says Keith Teare, Centraal CEO and founder.

"These multipart addresses are too clumsy," says Teare, who also founded EasyNet Group PLC, one of the largest Internet service providers in the U.K.

To use RNS on the company Web, you'd create a directory of common words that would be mapped to particular Web pages. Users need a plug-in, downloadable from www.centraal.com.

GOING THERE

Centraal's Real Name System (RNS) Web navigation service would be impossible without these three elements:

- The complete character set of the Unicode table, so that RNS is truly a global naming system
- Object programming, to add properties to otherwise flat URLs
- Extensible Markup Language, which provides a container for the address objects

Communicator code: Come and get it

True to its January promise, Netscape Communications Corp. this week has made the Communicator source code available.

To aid code users, Netscape has gathered some of Communicator's writers in a group called The Mozilla Organization and has chartered the group to act as a clearinghouse for the code. "We are the people who know the code best, since [until March 31] we are among the very small set of people who have ever seen it," group members say on the mozilla.org Web site set up for this undertaking.

The group's Mozilla name harkens back to the original code name for what became Navigator. A younger, less corporate Netscape then created the dinosaur-like Mozilla mascot (shown here); but the more polished Netscape of late has mostly kept the character behind closed doors.

Perhaps to recapture the entrepreneurial spirit, Mozilla's presence is again looming large. There are the group's name and Web site, of course. But most important, the company intends on using the Mozilla name as the generic term for browsers derived from the source code.

"In biological terms, Mozilla is a genus; Netscape Communicator is a species," Netscape says.

Intranet software designer takes a bow

2Bridge Software, Inc. last month raised the curtain on specialized intranet development software.

The 2Bridge software is a point-and-click Web site creation program that generates pages for publishing dynamic and static data. 2Share Server, for corporate content providers, offers a built-in review and approval process, along with the easy interface and dozens of templates.

The company put on quite a show, with demos going way beyond software capabilities. CEO Mansoor Zakaria, for example, recited an original poem that was a true entrepreneur's ballad: "I'd rather go down in a stirring fight/Than drowse to death at the sheltered shore."

2Bridge, in San Francisco, says a number of companies are piloting the software. They include The Goldman Sachs Group, Baxter International, Inc. and The McGraw Hill Companies, Inc.

Clinton slows "byte tax"

Clinton: Jokes he pulled rank on the techier member of the administration so he could head to Silicon Valley.

President Bill Clinton recently plugged electronic commerce and pledged to proceed with care in online tax efforts during an address he made to Silicon Valley entrepreneurs and investors.

"There should be no unfair breaks for the Internet, but we also should not let it drag down the prosperity we enjoy," Clinton told attendees of the Banc America Robertson Stephens Tech '98 conference in San Francisco.

Clinton endorses the Internet Tax Freedom Act, which puts a five-year moratorium on taxing online sales. And, he insists, once such a tax is imposed, a cut of it has to go to local and state governments, which rely on such revenue to develop community services.

Several entrepreneurs who attended the conference, as well as a closed breakfast meeting with Clinton, say they could work with the administration to study the online sales tax issue.

"Our position, of course, was no taxes," says Kim Polese, CEO of "push" vendor Marimba, Inc., which does most of its sales online. However, she adds, high-tech firms and politicians are listening to each other and may be able to communicate and compromise.

Web-based calendaring, scheduling on track

A variety of vendors offer software packages that let users schedule meetings and other events or resources via the company intranet.

BY MARK GIBBS

Like 'em or loathe 'em, calendars and schedules are part of business life. And while you might be good at keeping a calendar, your company may find that building a common calendar is tricky.

But a corporate calendar based on Web technology can be simple to implement and efficient to distribute via an intranet — just make sure you've got the right type first. Some Web calendaring programs schedule resources such as people, equipment and venues, while others schedule events.

Now Software, Inc., for example, offers a calendaring program, called Now Up-to-Date, that tracks events. Using it with the Now Up-to-Date Web Publisher module allows you to extract appointment records and publish them in Web pages. Now Up-to-Date also supports contact information.

With this calendaring program, you can create calendar entries directly in a Web server subdirectory or upload them from a remote PC. However, schedules and contacts published with Web Publisher are only viewable by Netscape Communications Corp. browsers. This is because you need the AboutTime and AboutPeople plug-ins to access calendars and contact records, respectively.

A particularly interesting feature is the way that the plug-ins work with users' copies of Now Up-to-Date, which is being renamed Eudora Planner because Now Software was recently acquired by Qualcomm, Inc. When you view a calendar or a contact, you can click and drag events from Netscape Navigator or Communicator and drop them directly into your own copy of Now Up-to-Date.

Up-to-Date Web Publisher provides no security measures; for those, you must rely on the Web server configuration.

Also tied to a server product is CyberScheduler from CrossWind Technologies, Inc. CyberScheduler essentially provides a Web interface to CrossWind's Synchronize, a scheduler for Unix and Microsoft Corp. Windows NT servers.

CyberScheduler includes extensive security to control who can schedule staff and meetings. It also lets you ask other calendar users to attend meetings and track responses.

Livelink OnTime Web Edition, from the OnTime Division of Open Text, Inc., is also an extension to a scheduling system — in this case, the Livelink OnTime servers for Windows NT, NetWare and Banyan Corp. VINES. Via a Web interface, you can examine, set and modify meeting plans, notes and task lists. The server-side component also can generate notifications of changes to your calendar via e-mail. However, you can't confirm or decline meetings by e-mail.

Calendars can be made public or kept private, and there's also support for defining who can modify whose schedules.

The simple and the complex

The most unusual entry in our round-up is the 3-2-1 Intranet! service from Internet Media, Inc. Companies pay for the service on a per-user, per-month basis. Users access 3-2-1 Intranet! over the Web, optionally using Secure Sockets Layer encryption.

The online intranet service provides a pick list of simple applications, from e-mail and chat rooms to business forms such as time sheets and a calendaring program, as well as a simple contact database. The calendaring features are somewhat simpler than those offered by other products, but the advantages of not having to manage yet another application may prove appealing to organizations with limited IT support capability or widely dispersed workforces.

EventCenter from Amplitude Software Corp. is perhaps the most sophisticated product in this collection. Even its remote users can publish and maintain calendar data, and it supports multimedia content.

EventCenter offers many levels of control. IT managers can assign event authoring and publishing, and can specify user access controls to limit calendar access at multiple levels. These levels burrow down to detailed event information, such as attendee lists or associated costs.

Users not only can view event and calendar information, but can also subscribe to areas of interest and get notifications of changes by e-mail. Using the vCalendar standard, EventCenter can "push" event information as text and objects that can be read into a desktop personal information manager.

"EventCenter has given us a central calendar space. It's the only product we've found that can do that," says Michael Beaudt, Web technologist for a 1,500-user intranet at Perkin Elmer Applied Biosystems, Inc., in Foster City, Calif. "The others do people to people or people to resources, but EventCenter does event scheduling that doesn't depend on the event being tied to a person or resource." ⊜

WEB CALENDARING AND SCHEDULING PRODUCTS

Here is more information on the vendors mentioned in this article.

Vendor	Contact information	Product	Pricing	Requirements
Amplitude Software Tiburon, Calif.	(415) 789-2600 www.amplitude.com	EventCenter	$4,995	Any browser, Windows NT running Microsoft Internet Information Server or Netscape Enterprise Server
CrossWind Technologies Santa Cruz, Calif.	(408) 469-1780 www.crosswind.com/cybdata.htm	CyberScheduler	$100 per user	Any browser, any Unix system or Windows NT
Internet Media Dallas	(214) 954-0055 www.iminet.com	3-2-1 Intranet!	$10 per user per month (10-user minimum)	Any browser
Now Software Portland, Ore.	(503) 274-2800 www.nowsoft.com	Up-to-Date Web Publisher 1.0; AboutTime plug-in	$130 per server; free	Windows 95, plus Navigator or Communicator, any server
OnTime Southfield, Mich.	(519) 888-7111 www.ontime.com	Livelink OnTime Web Edition	Server, $1,450, $50 per user	Any browser, Windows NT

The Internet Mail Consortium's vCalendar standard defines a platform-independent way to exchange calendars and [illegible]

[illegible] c.org/ietf-calendar.

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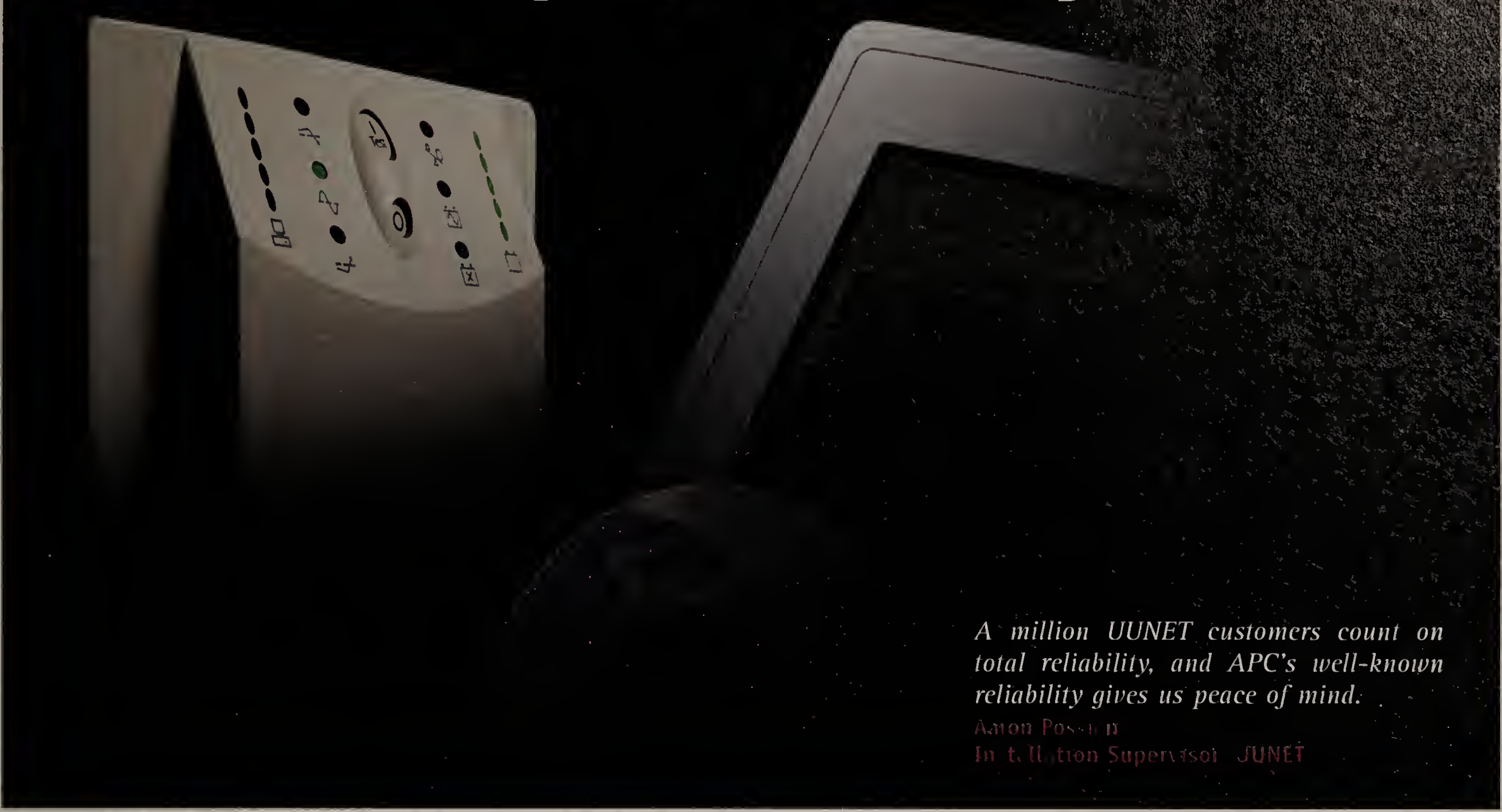

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Aaron Pos[illegible]

Installation Supervisor, UUNET

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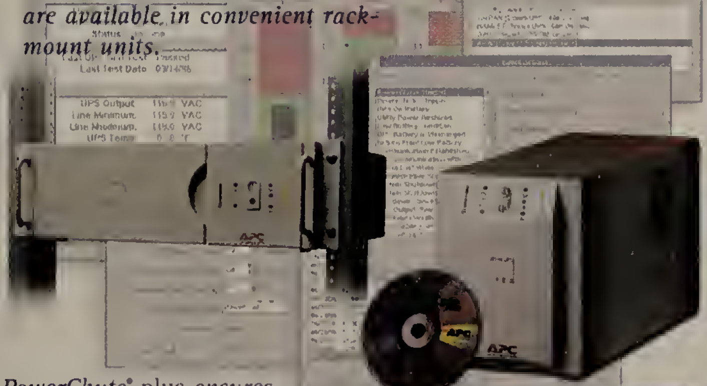

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Circle Reader Service #4

OBI: Paving the way to electronic commerce

BY TODD OSTRANDER

Until recently, intranet managers trying to take charge of corporate electronic commerce initiatives had few standards on which to rely. Now the Open Buying on the Internet (OBI) Consortium hopes to win the confidence of those managers with Version 1.0 of the OBI standard.

If OBI gains critical mass, the payoff for buyers and sellers could be substantial. There are three primary value opportunities:

- Process savings. The average cost to process a purchase order using a traditional paper-based method is $120, says the National Association of Purchasing Management, an organization for purchasing and supply management professionals. OBI could cut that cost significantly.
- Reduction in off-contract buying.
- Increase in volume of purchases from contracted suppliers, providing greater opportunity for negotiating tighter, more efficient contracts.

OBI origins

The OBI effort began in October 1996, when a group of Fortune 500 companies and their key suppliers formed the Internet Purchasing Roundtable. The group's goal was to provide access to easy-to-use, open, standards-based Internet purchasing solutions for the procurement of high-volume, low-dollar indirect goods and services. American Express Co. organized the effort and SupplyWorks, Inc., a business-to-business Internet commerce company in Lexington, Mass., facilitated it.

Over the following nine months, through a consensus-based process that included close consultation with technology providers and financial institutions, roundtable participants developed OBI Version 1.0.

With the roundtable's work finished, the OBI Consortium was formed with the goal of improving and promulgating the standard, as well as developing other standards and shared business practices for conducting business-to-business Internet commerce. Membership is open to buying and selling organizations, technology companies, financial institutions and other parties.

OBI at work

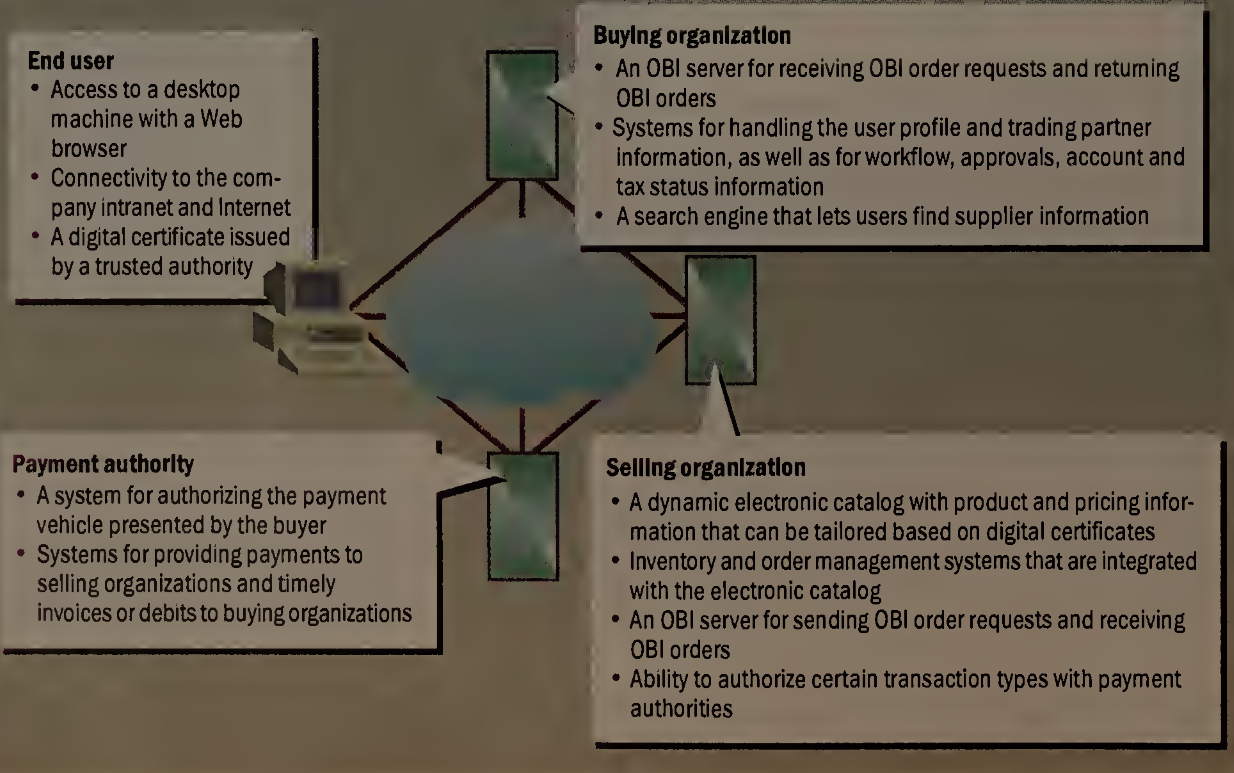
OBI 1.0 describes how the data should flow between the buyer and seller.

First, intranet users access OBI-compliant servers and use indexes to pick the products they want. The indexes connect the users through the World Wide Web to the suppliers.

At that point, a shopping basket is created on the supplier's Web site. When filled, the shopping basket is transmitted to the buyers' servers for processing. The purchasing application gets the information needed for processing the orders from user input or a default user profile.

OBI OVERVIEW

Four entities – the end user placing the order, the buying organization, the selling organization and the payment authority – are typically involved in an OBI transaction. Here's a look at what each needs to participate in the process:



End user
- Access to a desktop machine with a Web browser
- Connectivity to the company intranet and Internet
- A digital certificate issued by a trusted authority

Buying organization
- An OBI server for receiving OBI order requests and returning OBI orders
- Systems for handling the user profile and trading partner information, as well as for workflow, approvals, account and tax status information
- A search engine that lets users find supplier information

Payment authority
- A system for authorizing the payment vehicle presented by the buyer
- Systems for providing payments to selling organizations and timely invoices or debits to buying organizations

Selling organization
- A dynamic electronic catalog with product and pricing information that can be tailored based on digital certificates
- Inventory and order management systems that are integrated with the electronic catalog
- An OBI server for sending OBI order requests and receiving OBI orders
- Ability to authorize certain transaction types with payment authorities

For membership and other information on the OBI standard, visit the OBI Consortium's Web site at www.supplyworks.com/obi.

ASK DR. INTRANET

Please step in and lie down, Stev[illegible] Blass [illegible] sultations. He understands the [illegible] felt by [illegible] oping and managing intranets. Sen[illegible] dr.intranet@paranet.com.

I'm lost, storm-driven and [illegible] trying to set up a basic intranet, [illegible] some instruction. How do I set [illegible] Windows 95 Hosts file, for [illegible] how do I configure a Web server [illegible] browser to handle Common G[illegible] Interface (CGI) programs. On thi[illegible] issue, when submitting a form I [illegible] ting responses such as: "Rep[illegible] data? (Y/N)" and that the CGI [illegible] cannot be accessed offline. For [illegible] hitting either "Y" or "N" just r[illegible] same question.

I also need to know if Comman[illegible] =nnnn, the Windows system.ini [illegible] NonWindowsApps, affects the m[illegible] accessible from the viewpoint of [illegible] based CGI module.

— Dieny du Toit, softw[illegible] Johannesbur[illegible]

To set up the Windows 95 Ho[illegible] Notepad to create a file named "Ho[illegible]" in the Windows directory. In Hosts, you [illegible] create lines that contain a dotted decimal IP address followed first by a qualified hostname then by optional aliases. Th[illegible] line items are separated by white space.

As for the CGI issue, it sounds like your browser is telling you that your program is not working on the server side. So fir[illegible] make sure you can run the CGI program from the command line on your server. Then make sure your server will serve CGI by testing it with a known, valid CGI program. Most Web server software c[illegible] with CGI samples that work well enough for you to verify that your server will in fact successfully execute CGI programs.

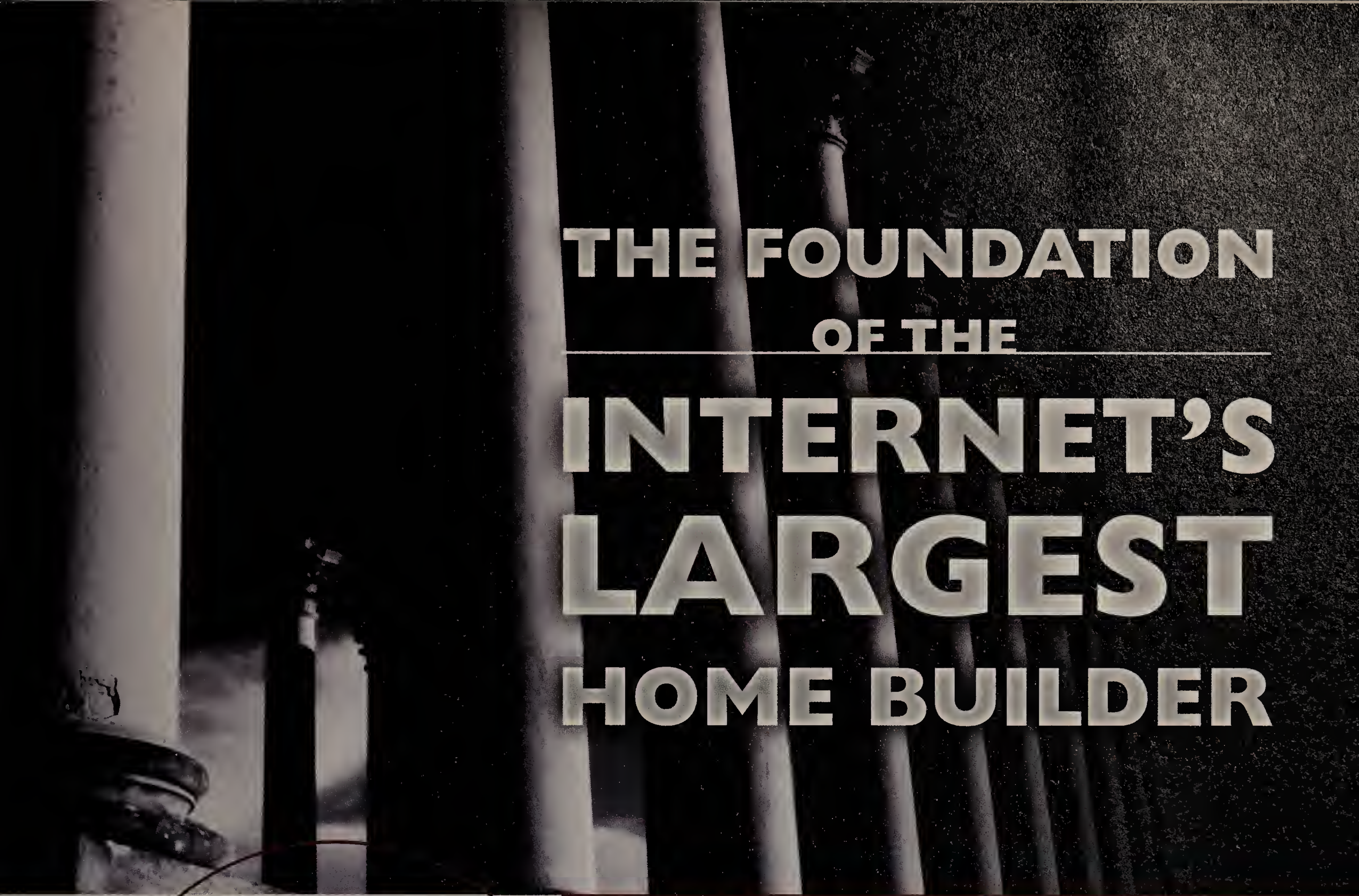
If you are going to use dynamic content seriously, you'll need a Web programming tool. I like Sapphire/Web from Bluestone Software, Inc. because it lets me produ[illegible] active content in programming langu[illegible] I don't even know. Plus, it installed correctly on the first try.

Another word of advice: Before you get too far into constructing a patchwork of CGI scripts and forms, take the time to step back and look at the big picture. You don't want to code yourself into a corner.

And in response to your last question: No, that system.ini entry doesn't affect the amount of memory accessible. Rather, it sets the size for environment variables used by NonWindowsApps.

Blass is a network architect at Houston-based Sprint Paranet, a distributed computing systems services provider.

[illegible] nd informational workshops.



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Circle Reader Service #3

Completed requisitions are routed through the users' organizations for approval. Once approved, the requisition is turned into a purchase order and transmitted back to the supplier's server for order processing.

Finally, the supplier updates order acknowledgement information and publishes it on its Web site.

Although OBI developers recognize the importance of payment options, they purposely left them out of the first version in the interest of time.

OBI defines the supplier side of the business process more specifically than the buyer side, but the standard will have to evolve to meet each equally.

For suppliers, OBI provides a process standard that creates a somewhat predictable environment for business-to-business electronic commerce. OBI leverages an existing electronic data interchange (EDI) infrastructure as well as Web sites that companies have developed to market and sell their wares.

Challenges ahead

Among large supplier organizations, support for the OBI standard is strong but remains uncertain. The challenge for large suppliers will be in their willingness to work with technology vendors to ensure that requirements not met by OBI 1.0 are addressed.

For example, the OBI standard must address challenges such as slow and unpredictable Internet performance, ways for users to search for products rather than suppliers and a means of accommodating suppliers that are not OBI-compliant.

The challenge for smaller suppliers remains the same as that of EDI: cost of implementation. Microsoft Corp., Netscape Communications Corp. and other major players must release cost-effective, OBI-compatible products if the standard is to achieve critical mass.

FOR BUYERS AND SELLERS

In order to meet the basic requirements of buyers and sellers, the OBI standard would have to meet the following requirements.

For the buyer

- Offer a product/commodity index
- Support shopping baskets for multiple suppliers
- Enable business rules routing
- Facilitate transactions

For the seller

- Allow multimedia catalog management
- Specify creation of shopping baskets
- Handle order processing
- Provide for order acknowledgment

OBI cannot succeed without vendor adoption of buyer- and supplier-side requirements. To date, most key vendors have acknowledged conceptual support for the standard and many have joined the consortium. But new standards and technologies are rapidly emerging that will provide competition for OBI and require mind share and development resources from vendors.

Two of these new standards are Internet EDI and the Extensible Markup Language (XML). Recently approved by the World Wide Web Consortium, XML holds tremendous promise as a competing technological solution. XML allows compatible tools to capture XML tagged information dynamically from Web sites without requiring a transaction.

The business benefits derived from OBI for buying organizations are extremely compelling. However, with the exception of Office Depot, VWR Scientific Products and a few other companies that have demonstrated OBI- compliant solutions, supplier acceptance is a ways off.

Regardless of whether OBI becomes the accepted standard, the Internet Purchasing Roundtable, American Express and SupplyWorks deserve credit for launching the drive to establish standards in a rapidly changing arena.

Ostrander is vice president of marketing at Elekom Corp., a business-to-business electronic commerce solutions provider in Bellevue, Wash.

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Circle Reader Service #8

Weaving the Web

Macromedia's Dreamweaver authoring tool spins stylish sites with ease, but it lacks the depth and breadth of tools found in Microsoft's FrontPage 98.

BY LEE SCHLESINGER

With the proliferation of Web authoring products these days, any new tool needs something special to succeed.

Macromedia, Inc.'s Dreamweaver stands out for its graphical authoring tools, support for style sheets and animation, and transparent transport between its graphical page construction environment and command-based authoring. However, its high price and lack of an image editing tool, as well as a sparsity of page templates, make it most useful to designers who already have tools for creating graphics.

Starting to weave

Launching Dreamweaver brings up a main window for page content and three floating windows for tailoring that content. One of these floating windows is for formatting text, another is for inserting objects and the third is for opening still more windows for specialized tasks.

To create a new page, you type in the main window or download an existing page or site. A site window lets you store sets of File Transfer Protocol (FTP) connection information, then connect, get and put up files with the click of a button.

You can track users working on a site via a check-in/check-out feature. And, from the site window, you can preview a page in any browser.

Unfortunately, Macromedia provides no utility for importing common word processing files, such as those in Microsoft Word .doc format. But working with common HTML elements such as images, text and tables is a breeze. We really appreciated Macromedia's multiple levels of undo commands.

SCORECARD

Criteria	Rating*
Overall score	7.15
HTML content editing (20%)	9
Site management features (20%)	7
Forms editing (10%)	7
Table editing (10%)	7
Frame editing (10%)	7
Document import/ conversion (10%)	5
Client/server-side image map editing (5%)	1
Upload to server facility (5%)	10
Templates/wizards (5%)	6
Documentation and online help (5%)	10

* Individual category scores are based on a scale of 1-10. Percentages are the weight given each category in determining the total score.

Dreamweaver lets you save snippets of HTML code into temporary repositories called libraries. Each site you work on can have a single library; it would be nice to have a global library, but the product has none. You can paste text from a library onto a page with a single click.

Form, table and frame editing is highly graphical but not as intuitive as with Microsoft Corp.'s FrontPage 98. For example, right-clicking on a table element brings up a context menu that lets you change properties of the cell, row or column. But right-clicking in a form does not. You have to make changes on a formatting toolbar in a floating window.

HTML heaven

Dreamweaver has the best tools for creating HTML 4.0 style sheets we've found in a full-featured Web authoring product. Unlike FrontPage 98, which makes you type in style sheet commands in a text window, Dreamweaver employs a graphical interface to let you create standard styles for typefaces, alignment, backgrounds, borders and other elements, and save them as style sheet files. You then can reference a style sheet file from any HTML page, and all your formatting is in place.

Many of the properties you can set from within style sheets also are available within HTML files. Dreamweaver's main window sports menus to modify the properties of elements and text, or you can change them using a toolbar in a floating window.

For the visually oriented, Dreamweaver can display vertical and horizontal rules and a grid, which lets you position items precisely by dragging them around on the page.

There's a complete complement of commands for creating tables and frames. A few frame templates are included with the product, but finding them takes a bit of work because they're hidden under the Help menu.

If you feel the need to get away from the graphical tools, you can launch your favorite external editor. The product is bundled with Allaire Corp.'s HomeSite 3.0, one of our favorite command-based editors. Dreamweaver makes no changes to any HTML code it imports or exports — a feature Macromedia calls transparent HTML. With virtually every other commercial HTML editor, a look at the graphically created code turns up unwanted metatags or other items you never meant to put on a page.

Today's Web requires interesting content, and Dreamweaver can provide it. In addition to dynamic HTML, Dreamweaver can generate JavaScript animations that move content.

A layered approach

Animations depend on layers, which are containers for content that Dreamweaver can position on a page. To use them, you select the Layer command on the Insert menu, then drag an object from the page onto the layer. Next, you specify a starting and an ending point on a graphical time line. You can designate additional key frames on the time line to specify where the object should appear between the start and end time. This is useful when describing a curve.

PRODUCT CAPSULE

Product:	Dreamweaver
Vendor:	Macromedia, Inc., San Francisco
Contact information:	(800) 326-2128 www.dreamweaver.com
Price:	$299
Pros:	Excellent page composition tools, style sheet support and graphical page animation via JavaScript.
Cons:	No image editing tool; limited number of templates.

You can have multiple layers on a time line, meaning you can create sophisticated animated graphics. Dreamweaver generates all the proper JavaScript code behind the scenes.

Once you're done with a site, publishing it is just as easy as downloading it. You can select all files that are newer than those on the target FTP directory with one menu choice and send them to the remote site with a single button click.

Other than that, there is no sophisticated site management, such as the ability to check for broken links. Dreamweaver also lacks a graphics construction tool kit, such as Microsoft's Image Composer, and a facility for easily inserting metatags such as description, keywords and robots.

Installing Dreamweaver is simple. Online help, in the form of HTML files, is excellent. Animation tutorials help you understand processes such as building time lines and layers.

Dreamweaver is stronger than FrontPage 98 for creating style sheets and is better at adding dynamic features. But it's a bit behind on table and frame creation and use of wizards. What's more, it doesn't have a graphics editor. At $299, Dreamweaver isn't as good a value as FrontPage, which costs less than half. ⊖

Go to www.nwfusion.com and download your own 30-day evaluation copy of Macromedia's Dreamweaver. Use DocFinder No. 6401.

Head to Macromedia's online forums at news://forums.macromedia.com/dreamweaver to view or participate in discussions about Dreamweaver.

Blasting off for InnerSpace

Ernst & Young International charts a stable orbit of intranet resources.

BY PEGGY WATT

Launching a browser has taken on new meaning for 75,000 employees of Ernst & Young companies worldwide. When they need research data, software updates or a colleague with certain expertise, employees set course to a place they call InnerSpace.

A celestial metaphor is appropriate for this intranet built and maintained by Ernst & Young International, Ltd. (EYI). New York-based EYI coordinates and guides the global initiatives of more than 130 far-flung and distinct Ernst & Young member firms that comprise the company's planetary system.

With access via InnerSpace to more than 800 Lotus Development Corp. Notes databases in sibling firms, Ernst & Young companies now find it easier to share resources and to work as part of a global entity, says Malcolm Collingwood, EYI director of international communications services.

Planetary council

InnerSpace was the inspiration of an EYI council of several dozen chief information officers from member firms. The council's mission is to provide technical guidance to member firms, in part by setting and imple-

Malcolm Collingwood (left) and Philippe Kauffmann place Ernst & Young member firm resources into orbit via the InnerSpace intranet.

menting corporate standards, Collingwood says.

For example, the council urged the worldwide adoption of Lotus Notes for e-mail and helped EYI design an X.500-based message switching service to ensure that member firms could communicate after converting to Notes. And it built EYLink, an IP network running on the frame relay backbone operated by Sprint Communications Co., Deutsche Telekom AG and France Telecom, for carrying that e-mail. Since EYLink's launch three years ago, the number of messages has grown from 10,000 to more than 800,000 per month.

INNERSPACE STATIONS

- Lotus Domino Web servers
- Four-processor Compaq Proliant 6500 Windows NT servers with 1G byte of RAM
- Main server housed in Lyndhurst, N.J.; a mirror runs in London

In February 1997, the council determined that a global intranet would benefit member companies and that some well-crafted intranet applications could ease the e-mail load. The council's aim was an orbital change: Instead of the Ernst & Young satellite companies sending out missives, the council proposed letting users with browsers retrieve what they needed. EYLink now charts a course to InnerSpace.

More than 30 of the largest Ernst & Young firms connect directly to EYLink, and 30 or so member companies access the network by remote dial-up. A number of smaller, more autonomous member firms don't yet have access to InnerSpace, Collingwood notes.

The 85% of employees who do have access can use either Microsoft Corp.'s Internet Explorer or Netscape Communications Corp.'s Navigator browsers to peruse InnerSpace.

When landing on the InnerSpace home page, users are greeted with a few satellite pointers — to announcements or newly posted resources, for example. More in-depth information comes through links to Planet Knowledge, a catalog of resource links; Planet EYI, a central repository and communications hub; and Planet Services, a site for software retrieval.

Blasting off

When deciding to launch an intranet, EYI brought on board the consulting services division of Software House International, a Somerset, N.J., reseller. EYI's IT staff shared the planning with the Software House team, which handled the bulk of the programming and continues to do maintenance.

A previous relationship EYI had with Software House drove development of one application, a software ordering system that the reseller encourages its customers to adopt. Authorized employees can log onto Planet Services, shop from a catalog that lists EYI's corporate rates, and place their orders online.

Parcel Post, a software distribution program, also resides on Planet Services. Users place documents on the Parcel Post site and let colleagues know the files are available for download. This saves them from having to send sizable e-mail attachments to different people. Typical parcels include PowerPoint presentations, replicated Lotus Notes databases and software updates.

"InnerSpace provides more control over who's downloading what," says Hans Friedli, general manager at Software House Enterprise Solutions and the InnerSpace team leader. "It frees the network considerably that not everything is replicated everywhere."

Planet Services went into orbit after three frenzied months of programming, primarily using Lotus Notes Designer for Domino and LotusScript for server-side scripting, Friedli says. InnerSpace runs on a Lotus Domino

CHRISTOPHER WEIL

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WebSENSE is a server based application available for Microsoft Windows NT, Microsoft Proxy Server, Netscape Proxy Server, [illegible]

server, which is replacing the many Lotus Notes servers throughout member companies.

The team also wrote a handy Java applet that lets users interrupt Parcel Post downloads, then later resume the transmissions from those points in the files. "This option is important in places like Africa where people are using [low-speed] modems," Friedli says.

"InnerSpace has made disseminating information much easier [and quicker]. In the past, a document would have been sent by fax, floppy disk, CD-ROM or courier," Collingwood says.

One major database containing information about Ernst & Young's largest clients could only be updated twice a year because it needed to be shipped by CD-ROM to all sites. Member firms now update and access the database, which is updated frequently, through InnerSpace.

LARRY PIERCE

When not conquering the slopes, Hans Friedli, general manager at Software House Enterprise Solutions, leads EYI's intranet team.

Alternate earths

The second resource center on InnerSpace, Planet Knowledge, acts as a transporter to many Ernst & Young databases, including those housed on member firm intranets. Access restrictions may apply, but users can usually get an abstract of information from a Planet Knowledge resource catalog. A document owner can then authorize retrieval.

"Many knowledge databases are plugged into this Web site. This is really the international information hub," Friedli says. Ernst & Young LLP's EY/KnowledgeWeb is one of the largest member firm intranets available through Planet Knowledge.

A smaller body, Planet EYI, contains data maintained by EYI for member firms. Its resources include general practice information, marketing materials, databases of competitive intelligence and internal communications. Planet EYI also includes a bulletin board system and discussion groups.

EYI is focusing on growing Planet EYI, says Philippe Kauffmann, EYI intranet project manager. Describing his job as "Dominizing" Notes databases, Kauffmann says he expects to add 200 or so Lotus Notes databases to InnerSpace during the next two months.

Other than about 250 static directory pages and templates, InnerSpace pages are dynamic, generated primarily from Lotus Notes databases.

Because Ernst & Young is a decentralized organization, member firms often maintain their own Domain Name Services (DNS), so EYI developed a global DNS to map between host names and URLs.

A user's request for access to a server maintained by a different member firm goes to the DNS service on the user's own intranet, which refers the request to EYI's global naming service via EY-Link. The global DNS recognizes the server name and routes the request.

Outer limits

InnerSpace is strictly for internal use, and is likely to stay that way. Ernst & Young may one day build an extranet, but the Web team says it most likely will not let clients into the intranet.

Other than that, the team sets no outer limits. It meets each week to consider changes and do status reports, and rewards users with T-shirts for making suggestions.

The intranet is barely a year old — EYI has only begun to fill this space. ⊜

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Circle Reader Service #5

Cruising for carriers

Some extranet managers drive a safe road by handing over the wheel to VPN service providers.

BY PEGGY WATT

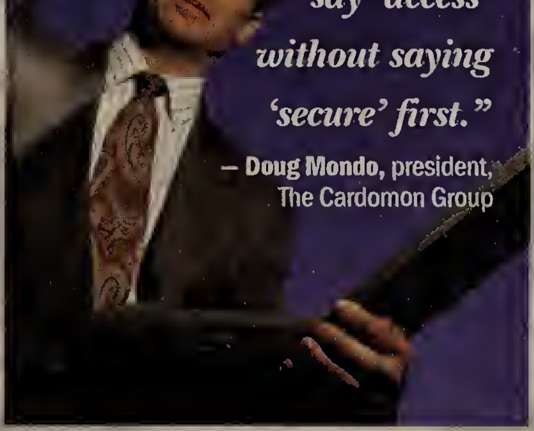
Lawyers are skittish when it comes to confidentiality, so the thought of reducing paper documents to electrons that would fly across an extranet understandably made litigation support firm The Cardomon Group a bit nervous. After all, the firm didn't want its legal papers cruising the same pipeline as cybersex or opposing counsel's e-mail.

To ease its apprehension, The Cardomon Group decided to develop its extranet using a toll road built just for its clients. The firm considered building this secluded electronic highway — commonly known as a virtual private network (VPN) — using its own equipment and hooking to the Internet. Instead, it opted to buy a VPN service from AT&T WorldNet, says Doug Mondo, president of the Santa Ana, Calif., company.

Similar decisions are becoming increasingly common among IT managers struggling to cope with the complexities of letting remote users, business partners and other third parties enter the corporate Web. Buying a VPN service saves them the hassles associated with picking out, installing and maintaining the remote access servers, modem banks, firewalls, security software and links needed to build their own secure extranet.

VPN services work the same way as home-grown VPNs. Data packets are encrypted and encapsulated, then transmitted through a "tunnel" on an IP network, often the Internet; authentication keys may be employed at each end. No other company's packets are allowed through a company's VPN tunnel.

In The Cardomon Group's case, information being tunneled across the Internet includes information from a repository containing deposition transcripts, exhibits for thousands of law firms and corporate legal departments, and other legal paperwork the company has been compiling for 12 years.



"We don't say 'access' without saying 'secure' first."

– Doug Mondo, president, The Cardomon Group

DAVID BUTOW

Obviously, it's essential that only authorized persons have access to the documents, and that those people are able to get to the documents at their convenience. "We don't say 'access' without saying 'secure' first," Mondo says.

The Cardomon Group manages its database and Web servers, as well as a router, at its Santa Ana headquarters. AT&T WorldNet handles administration for the rest of the extranet.

Besides AT&T WorldNet, large Internet service providers such as UUNET Technologies, Inc. and Netcom On-Line Communication Services, Inc. offer VPN services, as do carriers such as MCI Communications Corp. and GTE Communications Corp. Value-added network providers such as IBM, through its IBM Global Network, also play in this market.

Approximately one-quarter of the firms using VPN technology opt to outsource their VPNs to providers such as these, says Greg Howard, senior analyst for Infonetics Research, Inc., which is preparing a report called "User Plans for VPN Products & Services in 1998" for release next month.

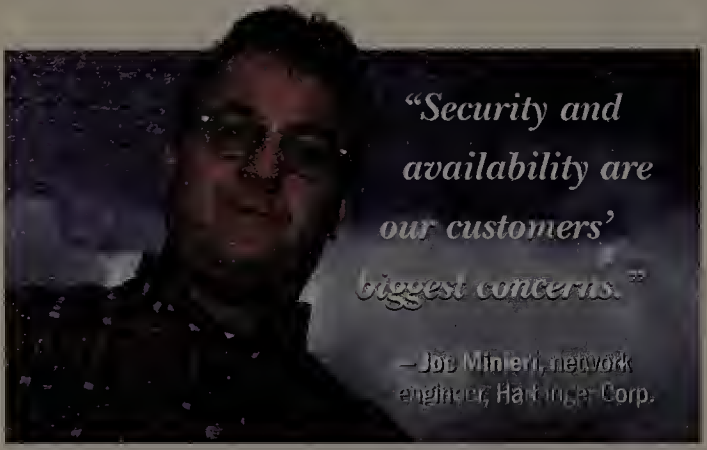
The San Jose, Calif., market research firm estimates the worldwide VPN market was $205 million in 1997, and says that figure will grow to $12 billion by the year 2001.

Setting priorities, making choices

When choosing a VPN provider, users should consider their geographic distribution, necessary access speeds, expected help-desk needs and asset management. End-user billing provisions also must be factored in if the service is passed on to a customer, as is the case with The Cardomon Group.

Typically, when a company outsources its VPN operations, the service provider installs and manages all the equipment. San Diego-based ISP American Digital Network (ADN) even manages the local circuits for its customers, giving them a single point of contact so they don't have to waste time determining which provider to call when problems arise.

Because ADN has relationships with all the local telephone companies, the ISP can help customers identify the most reliable local connection, determine the best pricing and get better responses if there are problems, says Steve Wallace, vice president of engineering at ADN.



"Security and availability are our customers' biggest concerns."

— Joe Minieri, network engineer, Harbinger Corp.

ALLAN WEINER

Concentric Network Corp., of Cupertino, Calif., will lease the onsite equipment, such as routers with tunneling software and firewalls. Then it will either maintain the hardware and software itself or will leave the administration to IT, says John Lawler, product line manager for VPNs at Concentric. A typical package includes a router or other internetworking device, Internet access, 24-7 support and T-1 lines, each attached to a security device such as firewall or encryption box.

"Most companies understand there's a need for security, but don't have the up-front money or a network administrator trained in security," Lawler says.

Harbinger Corp., of Atlanta, provides VPN services to its customers on an IP network that provides electronic data interchange and Web-based electronic commerce service. The company also works with customers to ensure VPN security for transmissions over the Internet. Extranet customers call Harbinger's modem banks and transmit encrypted data on the Internet through Technologic, Inc.'s Interceptor firewall at each end.

Harbinger, which partners with UUNET to provide Internet access to its extranet customers, encourages these customers to use the same ISP at different access points for greater security.

"Security and availability are our customers' biggest concerns," says Joe Minieri, network engineer at Harbinger.

As well it should be, Infonetics' Howard says. "Maintaining security is a job in itself because of the administration of passwords, digital signatures and software tokens," he explains.

If security is a particular anxiety, IT managers can seek out speciality VPN service providers such as Pilot Network Services, Inc., in Alameda, Calif. This ISP, for example, promotes industrial-strength security equipment and charges about $5,000 per month for its expertise.

Companies that want a routine VPN service might find Pilot's rates rather pricey. In general, monthly fees range from $2,000 to $3,000 per line, depending primarily on the transmission speed and levels of security.

That cost might pale in comparison to buying and, more significantly, maintaining VPN equipment. While there is a wide selection of firewalls, routers, modems and associated equipment available on the market and the prices are competitive, the expensive part may be training and keeping staff with the expertise to manage a VPN.

Reliability also should be high on an IT manager's VPN check list.

Most VPN providers offer a maximum, one-way transit delay of 150 msec, no matter how long the circuit. But an ISP with a sprawling network will have more points of presence and can deliver end-to-end service among a customer's sites without having to trust the capabilities of an "off-ramp" ISP.

Some service providers, such as UUNET and Concentric, guarantee nearly 100% uptime, and offer rebates to customers who experience failures. ISP and other VPN providers, in fact, are starting to use such guarantees to tout their services.

However, unless a carrier owns every inch of the network — including a local connection usually handled by a telephone company, such guarantees are more marketing than fact, says Bob Betros, vice president of sales and marketing at ADN.

ADN assists its customers by monitoring traffic and equipment and working closely with customers on preventive measures. For example, the company urges clients to consider an often-overlooked threat: internal trespass. "Most of the time, people think of a hacker from outside. But that's the easiest to protect against. Disgruntled employees are a security risk," Betros says.

"We expect a somewhat spiraling growth rate over the next few years, and we didn't want to have to build and maintain a lot of modem banks, servers and firewalls."

— **Ed Alldredge,** vice president of operations, Digital Network Associates, Inc.

DAVID BUTOW

ADN raises this security issue especially when it discusses network administration. And it requires customers to develop an acceptable use policy. "We work together to ward off attacks," Betros says.

Room for growing extranets

The benefits of letting a service provider handle changing equipment needs attracted Digital Network Associates, Inc. to the idea of outsourcing its VPN. Digital Network Associates not only uses a VPN, but also provides VPN access to its home health care clients, says Ed Alldredge, vice president of operations for the Costa Mesa, Calif., company.

"We expect a somewhat spiraling growth rate over the next few years, and we didn't want to have to build and maintain a lot of modem banks, servers and firewalls," says Alldredge, who chose AT&T's WorldNet VPN service.

Digital Network Associates' clients dial into AT&T WorldNet and send confidential patient care data to a central office. This setup eliminates procedures involving paperwork and error-prone data-entry, Alldredge says.

A SAMPLING OF VPN SERVICES

Provider	Contact information	Service	Monthly rate
American Digital Network, San Diego	(619) 576-4272 www.adnc.com	InterComm	$2,150
AT&T WorldNet Bridgewater, N.J.	(800) 831-5259 www.att.com/worldnet/wmis/virtual.html	WorldNet VPN Service	$2,366
Concentric Cupertino, Calif.	(408) 342-2800 www.concentric.com/business/vpns	Concentric VPN	$750 to $2,500
GTE Cambridge, Mass.	(800) 632-7638 www.bbn.com	Site Patrol	$2,750
IBM White Plains, N.Y.	(800) 426-4968 www.software.ibm.com/enetwork/technology/roadmap/roadvpn.html	Global Services	$2,000 and up
MCI Washington, D.C.	(800) 444-8722 www.mci.com/aboutus/products/glossary/vnc/index.shtml	InternetMCI VPN	$1,000 to $3,500 per month, depending on speed
Pilot Alameda, Calif.	(888) 407-4568 www.pilot.net/services/serv-secure.html	Road Warrior	$5,000
TCG CERFnet San Diego	(800) 237-3638 www.cerf.net/cerfnet/services/services.html	Dedicated Line Service	$2,100
UUNET Fairfax, Va.	(703) 206-5600 www.us.uu.net/products/extralink	ExtraLink	$5,000

Having a VPN service provider handle growth and new technical demands also appealed to American Fashion, Inc., which contracted with ADN to maintain a VPN on the Internet between its San Diego and New York offices, says Carl Schutte, MIS operation manager. With the tunnel comes reliable speed, and ADN maintains firewalls at both ends.

"Speed was our main reason. We aren't as concerned about security," Schutte says. "For a couple years, we had a frame relay circuit between the offices, at a 65K bit/sec port speed. Now, for about the same money, we have full T-1 and many more expansion opportunities."

The reasons to outsource are increasing as fast as the number of service providers. Value-added integrators are entering the market, for example. They offer consulting services to identify needs, administration options, and equipment and carrier contracts.

Whether an IT department wants total relief or only some assistance for its network administrators, it's sure to find something it likes among the growing VPN services field. ⊜

Lookin' into Linux

Set aside those operating system biases. If you're delivering intranet services, you've got to check out Linux — it's free, fast and feature-rich.

BY MARK GIBBS

In a world in which it's assumed that only geeks love Unix, a lot of otherwise cool intranet managers might be missing a great opportunity to build their corporate Webs on a fast, free, resource-friendly operating system — Linux.

This hugely popular Unix program is installed on approximately six million computers worldwide. Some of those Linux machines are serving intranet users at the University of Nebraska Press, in Lincoln.

"The Linux server has proven to be as reliable as any other server operating system I have ever used and more reliable than most," says Quinn Coldiron, systems department manager at the University of Nebraska Press, in a white paper on his organization's deployment.

The University of Nebraska Press turned to Linux when looking to replace an aging Novell, Inc. NetWare server. Coldiron first tried Microsoft Corp.'s Windows NT Server 4.0, but after a series of unresolvable problems and a lot of money spent on support calls, he decided to set up a test Linux server to see if it could handle the organization's application load.

From January to July 1997, the organization's Linux server only shut down three times — twice because of power failures in the building and once because of human stupidity, Coldiron says. "This reliability was a key factor in our judgment to use Linux as our server platform," he adds.

Tales such as Coldiron's notwithstanding, many other IT professionals lump Linux among the other Unix variants they so disdain.

"Non-Unix people perceive [Unix] as intended for tech types and, therefore, inferior to an operating system such as NT," says Steven Handleman, director of communications services for a money management firm in Philadelphia, of the prevailing attitude. Folks who think Windows NT, Unix's main competition these days, is easier to use and just as robust as Unix might be right on the first count but are definitely wrong on the second, he argues.

"Should we or shouldn't we use Unix?" is an age-old question that many IT managers have passionately pondered. And now with the proliferation of HTTP and other intranet-related servers, the operating system issue has come under an intensifying spotlight.

On face value, the Unix operating system in general should be highly desirable for intranets. It is widely recognized as a mature, well-understood, highly scalable, robust, high-performance operating system that is supported by multiple vendors.

But there is a downside among these sterling characteristics. Unix is more cumbersome and complex than NT, points out

KATHERINE STREETER

Randall Truitt, senior consultant at The-Web Communications, Inc., a consulting firm in Annapolis, Md.

So some intranet managers might simply prefer NT because it's easier to use than Unix. But others cite another reason to ignore Unix: A powerful inducement to go with Windows NT is political pressure.

"I know three companies that are silently putting more and more into Unix . . . at the expense of NT, simply because NT falls over too often," says Peter Flynn, an independent consultant in Cork, Ireland. Typical causes for NT crashing are memory access violations and I/O errors, he notes.

LINUX DISTRIBUTIONS

Created by adding software to the base code, Linux distributions are available from a number of players, including:

Product	Company	Contact information
Debian GNU/Linux	Cooperative effort by a non-profit, decentralized group	www.debian.org
Linux Pro Plus	WorkGroup Solutions, Aurora, Colo.	www.wgs.com
OpenLinux	Caldera, Orem, Utah	www.caldera.com
Red Hat Linux	Red Hat, Research Triangle Park, N.C.	www.redhat.com
Stampede Linux	Cooperative effort by a non-profit, decentralized group	www.stampede.org

The IT managers at these companies aren't inclined to talk about their decisions "because of pressure from upstairs," Flynn says.

"The buy-Microsoft-only ethos has taken over from the buy-IBM-only, and managers who decided [against advice from technology people] to use NT rather than Unix are now unwilling to lose face," Flynn explains.

Now the picture comes into view: Bringing in Unix to run an intranet may be more than just a technical gamble, it may be a career inhibitor. Oddly enough, running an intranet on Unix isn't that much of a risk, especially if you choose Linux, the hands-down favorite among the freeware systems.

Linux derives its name from Linus Torvalds, who in 1991 began developing the operating system because he was dissatisfied with the capabilities of the DOS version running on his new IBM 386-based PC. Torvalds, who at the time was an undergraduate at the University of Helsinki, wanted to use Unix but couldn't afford a commercial version. Writing his own Unix system was the next best thing.

What started as a one-man exercise quickly grew into a major, multiperson development effort. Over the Internet, Torvalds assembled a group of like-minded programmers, and by 1992, the first version of Linux became available.

Torvalds makes sure the Linux system is freely available. However, he and a number of other authors retain rights to the operating system code they developed.

Beyond the kernel

A variety of organizations, Red Hat Software, Inc. and Caldera, Inc. among them, have added software to the Linux base code, or kernel. This process creates "distributions," which, in effect, are complete, ready-to-run Linux operating systems.

Each distribution has its own orientation. With its distribution, for example, Red Hat aims to provide a richly featured system. Meanwhile, the nonprofit Stampede organization focuses on performance in its distribution.

The Linux applications market also is growing. For example, there's the Raima Database Manager++ database from Raima Corp.; FreeBuilder, a free, high-quality Java IDE compiler; and the Corel WordPerfect 7 word processor under license from Software Development Corp.

CHARLES GUPTON

Don't discount the huge online community of Linux lovers and its ability to answer support questions, says Bob Young, CEO of Red Hat Software, which makes a Linux variant.

There are even emulators that allow most Macintosh and Windows applications to run under the Linux system. Abacus Research and Development, Inc., in Albuquerque, N.M., for example, offers a full-featured Macintosh emulator called Executor.

Like a few of its counterparts, such as Berkeley Software Design, Inc.'s BSD Unix and the freeware Minix, Linux runs not only on Intel Corp. processors, but also on a variety of other platforms. They include the PowerPC 601, 603 and 604, Acorn Archimedes, Digital Equipment Corp.'s StrongARM and Alpha MIPS processors, Motorola, Inc.'s 68000, Apple Computer, Inc.'s Mach Microkernel for PPC Macintosh and Sun Microsystems, Inc.'s SPARC processors.

These versions of Unix that run on generic platforms differ from those offered by the big boys of the industry: Digital, Hewlett-Packard Co., IBM, Silicon Graphics, Inc. and Sun. Such vendors offer Unix systems for workstations on up through top-end servers. But no matter how good their products are, if you're not a Sun shop, for example, you probably don't want to buy Sun's Solaris system. Buying into new hardware, particularly hardware that locks you in, is usually seen as a much bigger commitment than buying into new software.

With a system such as Linux, you get the executable code at no cost, as well as the source code. Having access to operating system code ought to appeal to intranet developers who want the ability to fix their own problems and create customized platforms.

Worth a gamble?

Before you consider making Linux a cornerstone of your intranet, you need to consider the degree of risk. It is generally agreed that the key risk issues in any server rollout are implementation and on-going costs, performance and support.

When it comes to implementation cost, Linux is always cheaper than the likes of Windows NT. And installation is not much harder than it is for Windows NT, although the choice of additional hardware such as adapter cards is more limited for Linux.

Another advantage is that excellent performance for a Linux system can be achieved with modest processors (see sidebar, this page). The University of Nebraska Press' Linux server, for example, easily supports 40 simultaneous users of a specialized publishing application. The organization's old NetWare server, which had 256M bytes of RAM and two Pentium 150-MHz CPUs, would crash if five users logged on, Coldiron says.

What's more, Linux doesn't restrict your platform choice. Red Hat Linux, for example, runs on a wider range of PC hardware than any operating system but Windows 95, says Bob Young, CEO of the Research Triangle Park, N.C., company.

Support, Linux aficionados argue, is just as good if not better than the competition. A support query posted to one of the many Usenet newsgroups on Linux draws an answer in about 15 minutes, they say.

And don't "for a minute discount the value" of newsgroups and lists, Young says. He points to the fact that the technical support columnist at *InfoWorld,* a sister publication of *Network World,* gave the Linux community his technical support award for 1997.

However, if you're not comfortable with a reliance on newsgroup participants, you can hire support. Red Hat, for example, is developing a worldwide partnership program for supporting its Linux distribution.

Linux just might have a place on your intranet. So grab an old 486 PC, load a Linux distribution or download a copy from an archive, and check it out. You'll find that Linux is a different, effective way of providing intranet services that could save you a lot of money in the process. ⊜

LINUX ON WHAT?

Selecting the hardware for a Linux system is in many ways much easier than assembling a Windows NT system.

For starters, processor power is not a crucial issue with Linux. Given a modest processor — a 486 running at 100 MHz, for example — the performance of the bus and disk I/O subsystem will be the main limiting factor on performance.

A good guide to building Linux systems is "Building the Perfect Box: How to Design Your Linux Workstation," by Eric Raymond (see http://earthspace.net/esr/writings/lj-howtobuild.html). Raymond says:

- **"Don't bother with the latest Pentium Pro whiz-bang 300-MHz superscorcher." It won't pay off as much as buying fast disk subsystems and having lots of memory.**
- **Get a PCI-bus machine for maximum bus throughput.**
- **Get a SCSI controller and the fastest SCSI disks you can afford. "When you're running Linux, a [1M bit/sec] faster seek time can make a really substantial difference in system throughput."**
- **Don't buy Plug 'n' Play adapter cards. They won't do you any good, because Linux doesn't support them.**

— ***Mark Gibbs***

Go online for more info on Linux, including:

- **A white paper on one deployment**
- **An interview with Red Hat CEO Bob Young**
- **A list of Linux events**

6402

www.nwfusion.com

The model extranet

Extranets come in different styles. Do you know which is best for serving your business partners?

BY JULIE BORT

The word "extranet" has been so abused lately that you may be wondering if such a thing exists at all. In fact, it does.

While mass adoption has yet to occur, the number of implementers is growing quickly. And the type of company embracing extranets knows no bounds: adopters range from tiny specialty companies to large multinational corporations.

But most important, an extranet is such a logical, low-cost way of conducting business that it's likely to become part of your future, as well.

Simply speaking, an extranet is an IP application between a company and its business partners, usually involving Web technologies and using the Internet as transport. In some instances, an extranet uses other IP technologies, such as e-mail and workflow-generated applications. In others, a business partner's role is to supply content for the intranet, in which case the partners may simply mail a disk — an awkward method, but highly secure — or dump the content onto a Web server via a dial-up connection.

The key to any extranet is that it targets specific folks who are outside the company. That makes remote access to the extranet the rule and brings on a distinct set of technological and political problems.

Security and performance concerns are different for an extranet than for a Web site or network-based intranet. Authentication and privacy are critical on an extranet but are of minimal importance in a network-based intranet application and of no importance to a public Web site, for example.

Performance of an application also may be more political because an extranet is aimed at those who are most important to a company's livelihood. While it may be alright to use employees as guinea pigs for a slow, awkward application that breaks often, you won't want to do that to your customers.

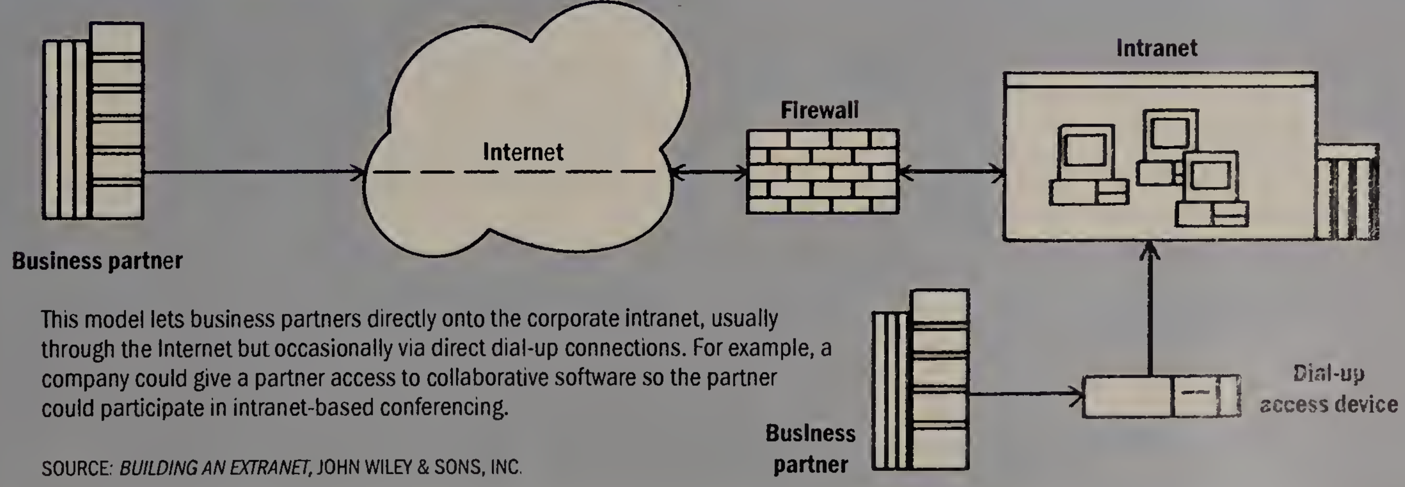
Content also is different for business partners than for employees. And it will be different for each type of business partner — customer, supplier and consultant.

A model approach

One of the best ways of coping with the peculiarities of extranets is to identify a type or model that best meets your objectives and the needs of the business partner you are trying to reach. A model represents a typical combination of security and development choices aimed at specific business objectives and partners. They are:

- The secured intranet access model, a highly secure way of allowing business partners directly onto your intranet.
- The electronic commerce model, for handling the special technical concerns of electronic data interchange (EDI)-like transactions.
- The specialized-application model, good for high volumes of partners when security is of high concern.
- The simple password-protected site,

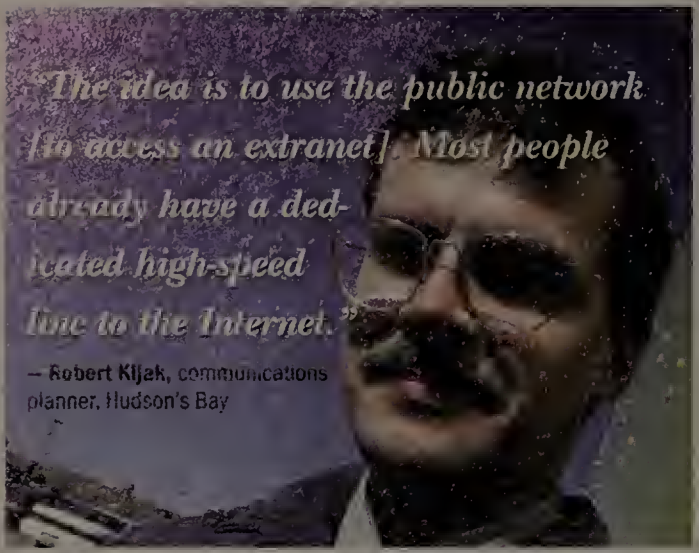
MODEL 1: SECURED INTRANET ACCESS



This model lets business partners directly onto the corporate intranet, usually through the Internet but occasionally via direct dial-up connections. For example, a company could give a partner access to collaborative software so the partner could participate in intranet-based conferencing.

SOURCE: *BUILDING AN EXTRANET,* JOHN WILEY & SONS, INC.

LINDA RICHARDSON



"The idea is to use the public network [to access an extranet]. Most people already have a dedicated high-speed line to the Internet."

— **Robert Kijak**, communications planner, Hudson's Bay

RICK CHARD

great for reaching large numbers of people when security isn't a high priority.

Perhaps the most complex extranet companies are building today follows the secured intranet access model. This is an extranet that allows business partners, or roving employees, direct entry onto the company's intranet via the Internet.

Yours, mine and ours

A secured intranet access application usually requires the use of a virtual private network (VPN). VPNs create an encrypted tunnel between the client and server over a public network, such as the Internet. They are especially useful if a wide range of transactions, such as e-mail, HTML and telnet, needs to be protected and if connections will bounce from server to server.

It also is possible to give users direct access to your intra-net without involving the Internet. For instance, you can use a dial-up infrastructure, but the higher cost associated with maintaining this negates much of the return on investment (ROI) benefits of using an extranet.

You also can contract with a private IP network carrier such as Infonet Services Corp. or Sprint Communications Co. Using a private IP network will give you service and performance guarantees, but again it would cost more than allowing your business partners to use their own Internet connections (see related story, page 15).

Extranet developers who allow access to the intranet from the Internet will want to be able to restrict access to the extranet in all sorts of ways, allowing different services for customers vs. suppliers and one vendor vs. another, for example.

The secured intranet access model is seeing its heaviest acceptance among large multinational corporations that have been using dial-up infrastructures. For example, Hudson's Bay Co., a 400-plus department store chain in Canada, is developing an extranet that allows suppliers to log on daily to existing sales systems and gather details on how much of their product has been sold. This wasn't possible with Hudson's dial-up network because the cost of providing secure, high-speed lines to every supplier was simply too high and the task of implementing a security scheme that limited the information each supplier could see was too difficult.

Go online for more information on extranets.
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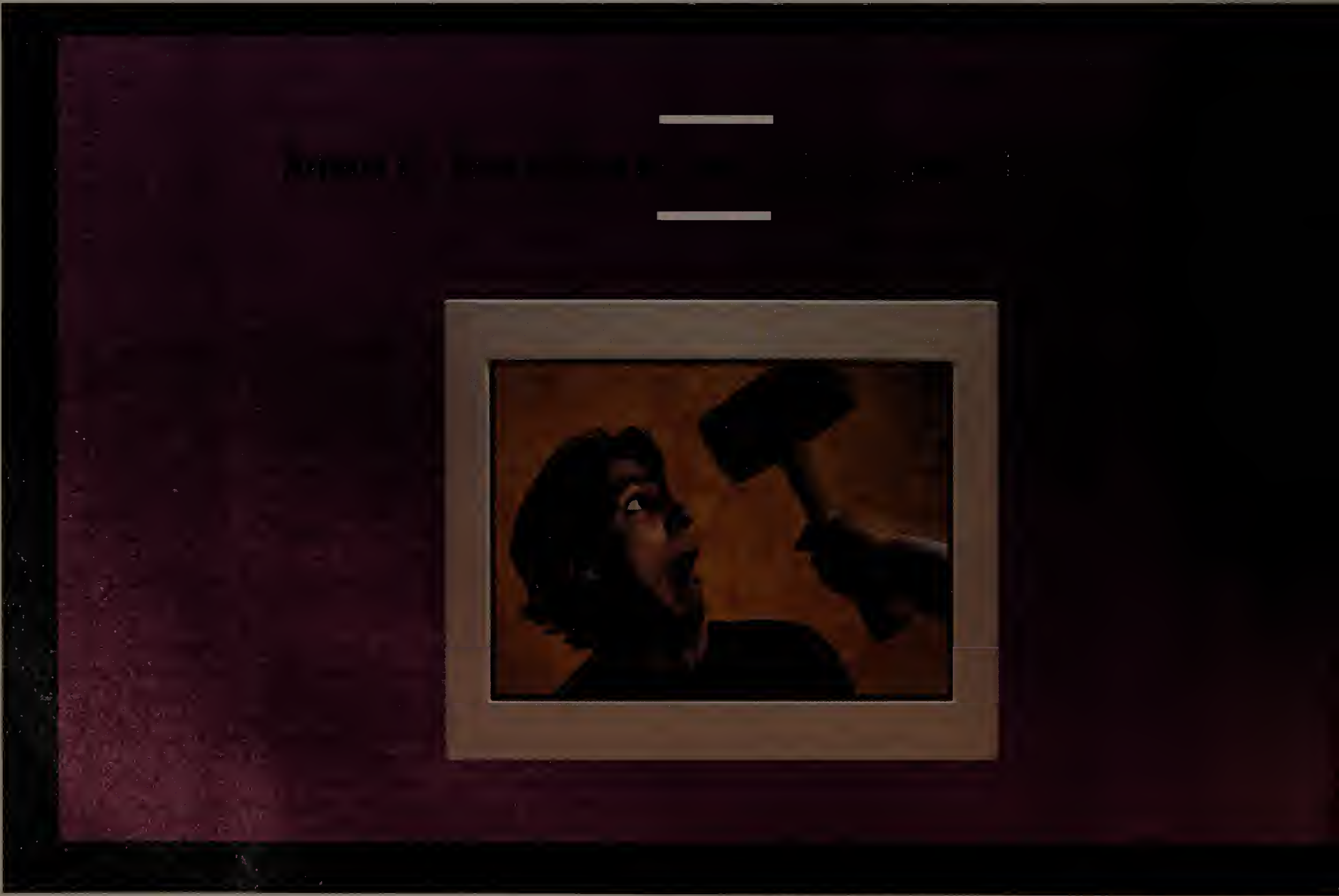
At least 300 vendors will be serviced by this extranet, says Robert Kijak, communications planner for Hudson's Bay, in Toronto. And the extranet could be expanded to handle electronic commerce, particularly for vendors that aren't trading partners on Hudson's existing EDI systems.

"The idea is to use the public network. Most people already have a dedicated high-speed line to the Internet," Kijak says. He notes that the extranet will reduce people, equipment and management costs associated with the dial-up environment and improve service.

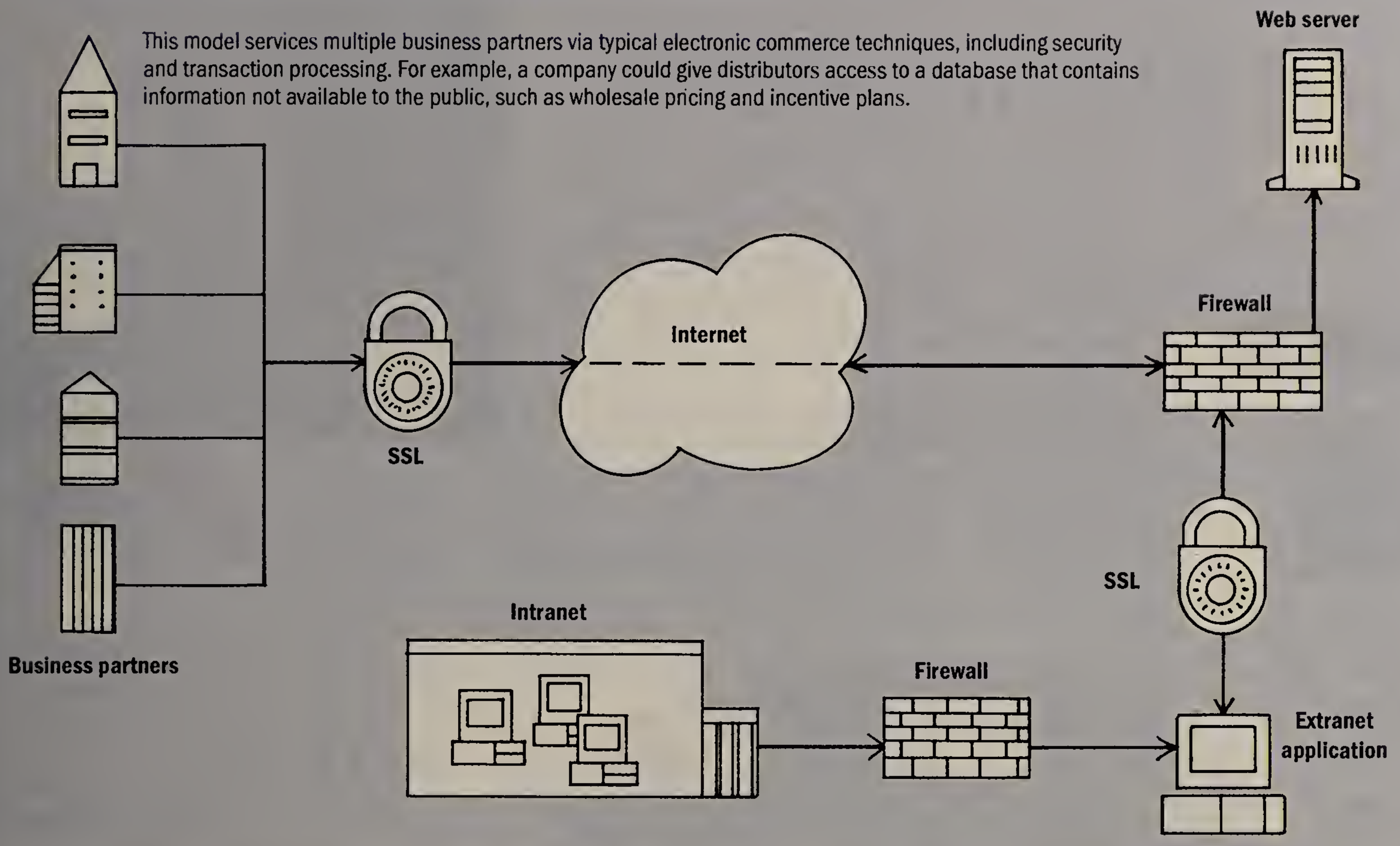
Money model

The second model — the electronic commerce extranet — is relatively common. It uses the same sort of security and network architectures as a business-to-consumer electronic commerce site but often is developed specifically for business-to-business commerce trans-



MODEL 2: THE ELECTRONIC COMMERCE EXTRANET

This model services multiple business partners via typical electronic commerce techniques, including security and transaction processing. For example, a company could give distributors access to a database that contains information not available to the public, such as wholesale pricing and incentive plans.



SOURCE: *BUILDING AN EXTRANET*, JOHN WILEY & SONS, INC.

actions. So it can use the Secure Sockets Layer (SSL) protocol for encrypting and decrypting communications between server and client session by session. SSL use also may be enhanced with digital certificates, which provide strong authentication and nonrepudiation.

This extranet is popular with two groups of companies. The first comprises small to midsize businesses that do not use EDI with their business partners but still want the benefits of electronic commerce. In particular, they're looking for the cost savings involved with ordering electronically, as well as the ability to invoice electronically and tie the transactions into accounting and purchasing systems.

The second group comprises companies that want to augment existing EDI systems with Web-based commerce to trade electronic information with partners too small to use EDI. However, when the electronic commerce model is used as a replacement for EDI, this extranet will probably need a VPN.

Yanking EDI for a Web-based extranet is a rarity but may become more

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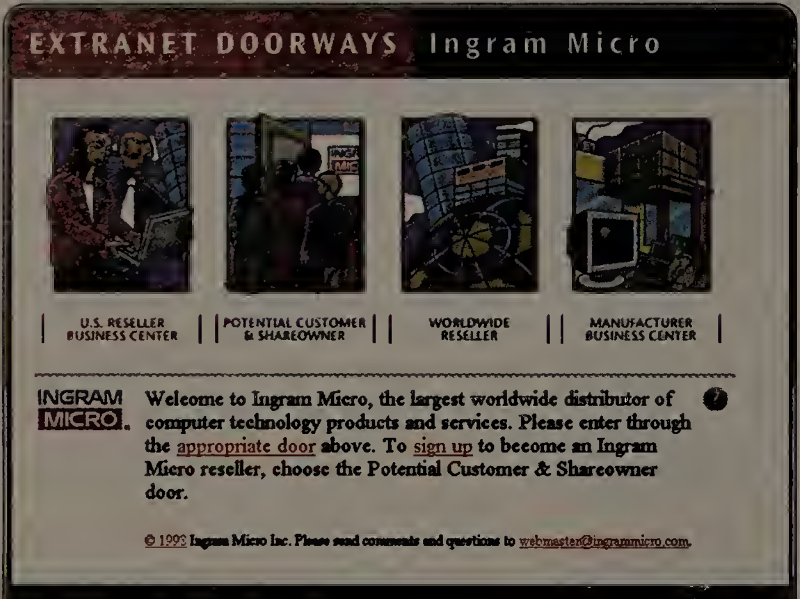
common. All eyes are watching the Automotive Industry Action Group (AIAG), which will oust old, awkward and expensive EDI with a trading partner extranet called Automotive Network eXchange (ANX).

ANX will handle traditional EDI-types of data exchanges between trading partners, as well as e-mail, CAD exchange, groupware and other applications.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Multibillion-dollar company Ingram Micro uses its public Web site as a gateway to a sophisticated extranet.

Some 40,000 automotive manufacturers and suppliers will trade via ANX, says Robert Moskowitz, cochairman of the IETF's IP Security working group and former chairman of the AIAG's ANX security group at Chrysler Corp.

A specialized model

The third model, for specialized applications, probably is one of the most common methods of building an extranet because it doesn't require a whole lot of security planning and poses little risk to a company's internal network. Access from the application to the intranet is limited or nonexistent.

A common security method for the specialized model is basic authentication. When more privacy is required, these extranets may use SSL and stronger authentication.

Examples of the specialized-application model abound. Many technology companies use it to communicate with service contract customers, and it's popular for extranets aimed at a company's dealers.

A specialized application actually can get quite complex, as is the case at Ingram Micro, Inc., a multibillion dollar distributor of computer products in Santa Ana, Calif. The com-pany uses a specialized-application extranet to let registered computer dealers place and monitor orders.

In essence, the www.ingrammicro.com site is a Web front end to legacy mainframe order entry systems. Virtually any sales transaction that can be done by a call center employee on a terminal can now be done over the Web, Ingram Micro officials say.

Implementing SSL and basic authentication — unencrypted passwords and IDs — made security between the browser and the Web server a minimal hassle and expense. The hard part was creating Java-based applications that interface with the data and application stored on the mainframe, Ingram application developers say.

The benefits have been tremendous. Ingram's customers can get up-to-the-minute pricing, place orders and check order status, without Ingram carrying the cost of a call center employee. And because all of Ingram's customers prefer using the Web rather than the telephone, customer satisfaction has improved.

Another example of the specialized-application model is an extranet built by the Defense Advanced Research Projects Agency (DARPA). The extranet, dubbed Extranet for Security Professionals (ESP), allows committees that develop government policies to work online.

Prior to ESP, committees could take years and spend millions of dollars on creating policies, working through in-person meetings, faxes and phone calls. Today, committee members simply log on with digital certificates over an SSL connection and attend virtual meetings. They can even create agents that sniff out information of interest and provide alerts that can be immediately broadcast to all members.

"The ESP makes so much sense. It's a simple and affordable way of doing business in the 21st century," asserts Matt Donlon, director of DARPA's Security & Intelligence Office, in Washington, D.C.

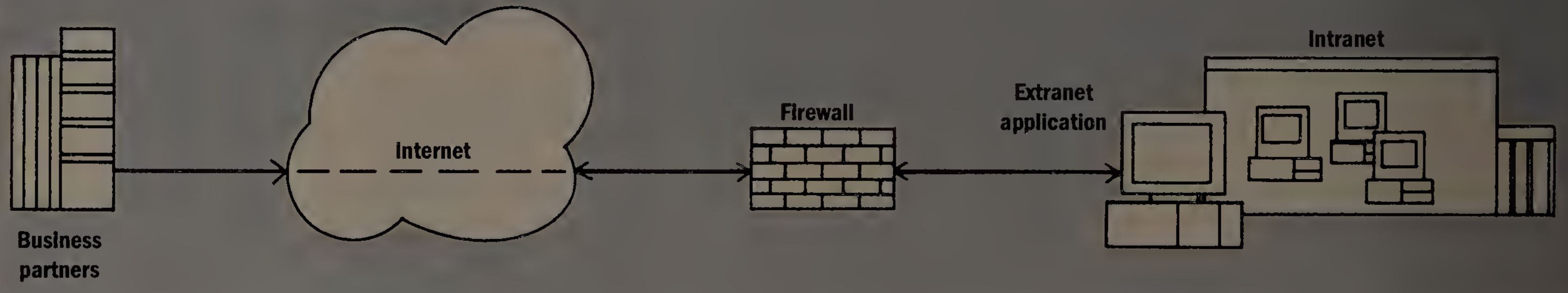
In fact, one policy professional estimated that DARPA would save $1.5 million on its policy-creation project alone, based on internal ROI evaluations that factored in savings of time, airfare and other associated expenses.

Specialized applications can even be easier to create. Some are simple, password-protected Web sites that are placed outside the firewall. This does not refer to a business-to-consumer site that uses basic authentication to collect demographic data. In contrast, an extranet's goal is to restrict access to a specific set of known users.

For example, the CEOlink site bills itself as "a private community on the Web" for members of The Council of Growing Companies. The CEOlink extranet, at www.ceolink.org, offers information on business management issues, chat sessions, and data and resources such as a "government watch" to council members, who are CEOs of fast-growing, entrepreneurial companies.

"CEOlink supplies information to complement its annual conference in a cost-effective way. The things on the site are unique, and we are constantly putting new information on it that the council is not publishing in any other way," says Mark Towler, the council's Web site developer and president of Phase 2 Development Corp., of Oklahoma City.

MODEL 3: SPECIALIZED APPLICATION



In this model, the company develops an application specifically for one or more partners. Employees can access the application from the intranet, but partners only have limited, if any, access to the intranet. For example, a company could set up an extranet site through which core vendors could bid on supplying materials.

SOURCE: *BUILDING AN EXTRANET*, JOHN WILEY & SONS, INC.

The extranet is a boon to the Council in numerous ways. It is a draw for new members; an easy, cost-effective way for the organization to provide a forum for CEOs to exchange ideas; and keeps the organization in its members' minds. Plus, those who log on do so of their own accord, so they get just the information they want and not unsolicited e-mails.

The last model — the simple, password-protected extranet — is by far the easiest to create with the least amount invested in security. That also makes it the least secure kind of extranet available and not a good choice when sensitive data will be passed between business partners.

"We are constantly putting new information on the CEOlink extranet that is not published in any other way."

Mark Towler, president, Phase 2 Development Corp.

JIM ARGO

If you build it

A word of caution: Every extranet is not a success story, as one clothing manufacturer discovered after spending several thousands of dollars developing Web sites for its distributors. After the launch, the company found that its effort had flopped: Few customers visit the sites, even though they are attractive, speedy and well-organized.

Two lessons can be learned from this. If a company's business partners are not already heavily using e-mail and Web technologies, an extranet may not be the right service for them. And even if they are using those services, the extranet must provide a compelling reason to log on. It must, for example, offer exclusive and important information and a faster, cheaper way to order products or invoice products sold. It must solve an existing business problem or open a new business opportunity.

For most companies, an extranet does just that. And it does it faster, cheaper and better than any competing technology to date. ⊜

Bort is the coauthor of Building an Extranet, *published by John Wiley & Sons.*

INTRAVERT • MARK GIBBS

A sense of place

Community is a big buzz issue on the Internet and, if we're to believe the sharp yaps of those vendors offering related products, highly relevant to intranets. The idea is that software can be used to create a sense of place, a spirit of camaraderie and a compelling reason to pay attention to somebody's message.

Behind this assumption of a desire for community is the recognition that the Internet is a huge place without any context. The 'Net makes many people feel as if they are alone in an enormous library in which someone has dumped all the books on the floor, taken away the index cards and removed most of the light bulbs.

JOEL NAKAMURA

To these people, the Internet is a hollow, unfriendly place. Every brush with a human being makes them feel like they're coming out of solitary confinement into the arms of a welcome home party. Many of these people turn to the likes of America Online, through which they gain a stronger sense of being somewhere and being involved. (Nevermind the problems they have just getting connected and then sorting through the spam they receive.)

But providing users with a nice, warm, friendly, touchy-feely type of online experience usually isn't a business requirement on intranets. Indeed, many companies treat anything but business use of network resources as tantamount to stealing from the organization. And when it comes to scarce intranet resources and services — for example, access to Internet bandwidth — a parsimonious attitude is definitely in order.

<digression> Bandwidth management is emerging as a key when it comes to Internet access. If you've found that to be so, check out bandwith managers such as PacketShaper from Packeteer and FloodGate-1 from CheckPoint Software Technologies.

PacketShaper is a good product, but I can't see how Packeteer can survive when CheckPoint and other vendors subsume the bandwidth management functionality in their firewalls. After all, you'll always need a firewall, and if that device includes bandwidth management for less than or equal to the price of a stand-alone bandwidth manager, it's a no-brainer which you'll choose. </digression>

Getting back on track, let me ask: Does it really matter if users have good feelings about your intranet?

Well, some managers might argue that it doesn't, that anything not business-related is irrelevant. But that's a view that is only really true if you're running a production line. On a production line, whether it's for bottling Coke or making cars, nothing but output matters. On a production line, there is little or no room for creative thinking and self-expression.

Granted, these two attributes usually aren't associated with computer environments. Intranets, however, are ideal vehicles for creativity, self-expression and other humanizing factors because of their unique quality of being context-free.

When you come to define a context (that is, enable a new function or service) on an intranet, there's no significant cost. Even adding support for programming, in order to build Web server scripts, for example, doesn't cost much, especially if staff people are using easy-to-handle languages such as Microsoft's Visual Basic or Wilson WindowWare's WebBatch. (For a review of WebBatch, see *IntraNet,* October 1997, page 7.)

But without any programming, you could add a lost-and-found section for the cost of creating a page and assigning someone to handle additions and updates. Or you could create a page for tracking company bowling leagues or racquetball tournaments. In either case, no other content or service on your intranet is displaced.

Once such features are in place on your intranet, you've created community, you've provided things that people get involved with and by which they are amused. Most important, these efforts create interest in and generate familiarity with the company intranet and encourage familiarity with its use.

So where does that leave Web-based bulletin boards, in-house newsgroups and other community support software products? Well, if you can get your intranet population interested in them and using the products thoughtfully and diligently, you'll get a terrific bang for your buck.

But these tools often don't get much attention from anyone other than the really enthusiastic users. These systems tend to be technical in feel; I have yet to see a really compelling Web-based conferencing product for truly general use.

And exotica such as multiuser virtual reality systems from companies such as Oz Interactive offer today's intranets little more than novelty value. That may change, however, if everyone in your company gets really fast machines and head-mounted displays. Right.

The bottom line is that if you believe community has a role in defining the corporation, your intranet is the best tool you have. This is because your Web pages will, if you allow the inclusion of things that aren't restricted to business matters, create a sense of place, a spirit of camaraderie and a compelling reason to pay attention to what's going on throughout the corporation.

How have you fostered the community spirit on your company intranet? Send examples to imcolumn@gibbs.com or leave them at (800) 622-1108, Ext. 7504.

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Briefs

WebLogic, Inc. *last week said it has integrated* **RSA Data Security, Inc.'s** *Jsafe cryptographic tools with WebLogic's Tengah Java application server. The RSA technology will let companies build secure, distributed Java applications, WebLogic officials said.*
✆ WebLogic: (415) 659-2600

Momentum Systems, Ltd. *last week introduced a Windows NT version of its Intelligent Network Gateway, used for sending* **electronic data interchange** *files via File Transfer Protocol, SNA or Simple Mail Transfer Protocol. The gateway starts at $25,000 and will ship next month.*
✆ Momentum: (609) 727-0777

CyberCash, Inc. *today will announce a new version of its* **Internet-based payment-processing service,** *dubbed Cash Register 3.0. The company said the new version is easier for Web merchants to use because they only have to download 100K bytes of code to their Web commerce servers to support different payment services. Previously, merchants had to download 20M bytes of CyberCash code to their servers.*
✆ CyberCash: (703) 295-0880

IBM *last week introduced nearly 20* **security services.** *The services include:*

- *Security Workshop, which spells out for customers the ramifications of doing business online. The workshop would be held at the customer's site.*
- *Ethical Hacking, whereby IBM will attempt to break into the customer's network and provide a detailed report that includes recommendations for immediate and long-term improvements.*
- *Security Health Check, in which IBM will evaluate the customer's overall security plan.*

✆ IBM: (914) 765-1900

Microsoft Outlook, other new e-mail clients could open doors to viruses

But Microsoft officials say users would have to lower security settings to fall victim.

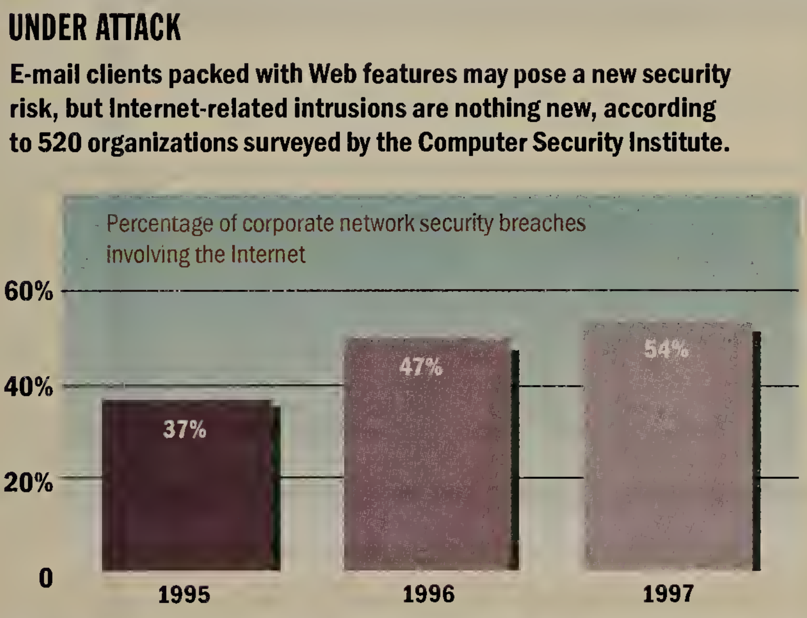
By Andy Eddy

Remember the rumors about the so-called Good Times virus, which could purportedly be acquired by simply reading the text of an e-mail? The virus gurus calmed us all down when they claimed such a thing could never happen.

They were wrong.

Such virus problems are possible now that software companies have begun adding Web features to e-mail clients.

By giving e-mail messages the potential for rich Web-like content, nasty elements may be able to find their way onto your machine. And you may not have to physically open a mail message for this to happen.



A particularly insidious example was brought to the attention of *Network World* at a recent gathering of the Java Security Alliance, in Napa, Calif.

A. Padgett Peterson, a security expert at Lockheed Martin Corp., noted that he had created an HTML message containing a Visual Basic script in the body of the message (not attached as a file), which in turn triggered an ActiveX control. This blend of elements made it possible for the sender of the e-mail to write a file to the reader's hard drive.

Conceivably, the file could be an executable file with the ability to introduce a virus or other malicious code into the user's system.

Peterson, using a beta version of Microsoft Corp.'s Outlook 98, found that Outlook's "preview pane" actually opens a message that's highlighted in a queue — without the user double-clicking on it.

If a user gets a message containing this dangerous code at the top of his mail queue when launching Outlook 98, the user's computer will execute the code. Microsoft said that while this scenario could happen, it would not be likely, and that a user would have to adjust the machine's security settings to accept this type of code without validation.

Microsoft said the only other way the code would execute is if the user OK'd the code from a warning dialog box that Outlook 98 produces after it realizes the message contains such code.

George Meng, a group product manager for Outlook 98, said the program uses Internet Explorer 4.0 components to render HTML messages, and Internet Explorer 4.0 defaults to a setting that brings up such a dialog box. Meng and Rob Bennett, a group product manager for Internet Explorer, both said this is enough to protect end users from outside hazards.

"We make it super-easy for the user to see when active content is being pushed down to them. If the code interacted with the file system, it would bring up an alert that says the content might not be safe," Bennett said.

Bennett explained that identical damage could be caused by visiting a Web page that contains the same code (and faces the same security blocks), because Internet Explorer 4.0's rendering engine drives both applications.

When asked if damage was possible if the user manually lowered the computer's security settings, Bennett admitted that it was. But he also noted that a systems administrator using the Internet Explorer Administration Kit could lock security settings for all users within an enterprise, making such a situation less likely.

This doesn't do away with the chance of harm. It just makes it more difficult for a third party to mess up a company's computer systems.

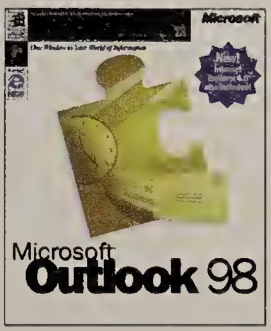
Christopher Klaus, founder and chief technology officer for Atlanta-based Internet Security Systems, Inc., likened harmful code on a Web page to a venus fly trap, in that such code has to lure people to the site before the code can be introduced. E-mail, meanwhile, is more active.

"That e-mail doesn't require the same principle as a Web page is a big concern. [Spammers] can specifically target who they want to target through e-mail and can hide their tracks better," Klaus said.

There's also concern over Outlook 98 and Internet Explorer 4.0 sharing the same security settings.

Paul Hoffman, director of the Internet Mail Consortium, said he believes users approach Web sites and e-mail quite differently.

"You might have your settings in the Web client very low when you go to a site that you know very well. Because e-mail inherently can be received from anyone, these programs need different settings from a Web client," Hoffman said.



Outlook 98 *may have a few security holes.*

More than Microsoft

Hoffman noted that Microsoft isn't the only company adding Web features to mail clients, and any mail client that renders HTML might open the user to similar security risks.

"I am very much against automatically launching anything in e-mail given that you didn't ask someone to send it to you. You open an e-mail with little information," Hoffman added.

The best advice is to doubt everything that comes into your e-mail box and, as Klaus cautioned, take every precaution to ensure the messages you receive are authenticated. However, Klaus also noted that a majority of attacks on enterprise networks come from insiders.

"It comes down to awareness. How much do you trust the peple who e-mail you? How quickly can we educate people about running these scripts? It's just a matter of time before someone devises a script that becomes a terrible thing on the Internet," Klaus said. ■

Get more online:

- A. Padgett Peterson's explanation of how he got Into the hobby of fighting viruses
- A comparison of Java and ActiveX security

6436
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NET INSIDER

Colliding with reality

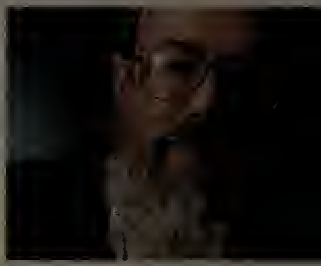
Did someone skip a decade somewhere?

I thought the Ethernet vs. token-ring wars ended long ago, and that Ethernet won hands down. But if that was the case, why are we seeing so much hype about High-Speed Token Ring? And why is the hype presented in such a way that it reminds us of contests fought long ago?

There has been a spate of articles in this and other publications that explains how token ring is superior to Ethernet. The most commonly mentioned differences are the relatively small maximum frame sizes for Ethernet and token ring's support for link-level traffic prioritization. In addition, many articles point out the ability of token-ring networks to have multiple simultaneous paths between switches, whereas Ethernet environments can only have one such path between switches. Less frequently mentioned these days, but showing up from time to time, are the claims that Ethernet collapses under a high load and is less predictable than token ring.

There are problems with most of these arguments. Strings of large packets are quite rare, and simple delayed-interrupt tricks in the interface cards can deal with most performance issues. Most corporate network designs do not have multiple paths between switches and even fewer will as Layer 3 switches continue to get deployed. The disputable claims that Ethernet collapses or is less predictable than token ring do not apply in the increasingly common full-duplex switched Ethernet networks. The link-level prioritization issue is interesting, but the Ethernet people are also working on that.

My problem is not that the claims are false or irrelevant, but that they are context free. They are presented in a way that implies network designers should seriously consider moving their Ethernet networks to token ring.



Scott Bradner

It is silly to imagine much of that happening. The disparity in cost between Ethernet and token ring is just too great. For example, 4M/16M bit/sec token-ring PC interfaces cost more than six times as much as 100M bit/sec full-duplex Ethernet interfaces. Token-ring switches cost four times more per port than 100M bit/sec full-duplex Ethernet switches.

Ethernet is vastly outselling token ring. I do not have the actual numbers, but in a data communications catalog I got yesterday, there were 53 pages of Ethernet products and one third of a page featuring some token-ring products. If you think that the token-ring-is-better argument is relevant, check out the local video store to see how many Betamax tapes they have.

Don't get me wrong. The development of fast and gigabit token ring is a fine thing. Those sites that use token ring — and there are quite a few — will benefit greatly from devices that provide an upgrade path. I just think that High-Speed Token Ring proponents should be a bit more realistic in describing just who should be paying attention to this technology. To do otherwise, as a co-worker once said, is to do data-free analysis, and the result is a collision with reality.

Disclaimer: Harvard people collide with reality often and occasionally emerge winners, but the above expresses my own frustration.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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Introductory report:
Using the Internet as the Corporate Virtual Private Network

Most corporations are familiar with using the Internet for external affairs including employee access and creating a sales and marketing presence on a Web site. Now, corporate network managers are evaluating the potential of using the Internet's flexibility, low cost, security and anytime-anywhere connectivity as a solution for their high-performance private network requirements.

This report evaluates the bandwidth charges and management costs of an Internet-based corporate backbone, as they compare to traditional WAN solutions of private lines and frame relay. The cost analysis is combined with a critique of Internet performance guarantees and information security to provide a full scenario of how different workloads can be supported over such a network. Leading ISPs offering corporate intranets and VPN solutions are profiled according to the services, terms and conditions they provide, and their technology platforms. Finally it portrays real-world companies who have adopted the Internet as their corporate backbone.

To address these issues, Network World has assembled a team of IDC's most senior analysts in the areas of Internet technologies and services. The study is designed to assist buyers in better understanding how, where and when to use Internet services and technologies to support enterprise networking strategies.

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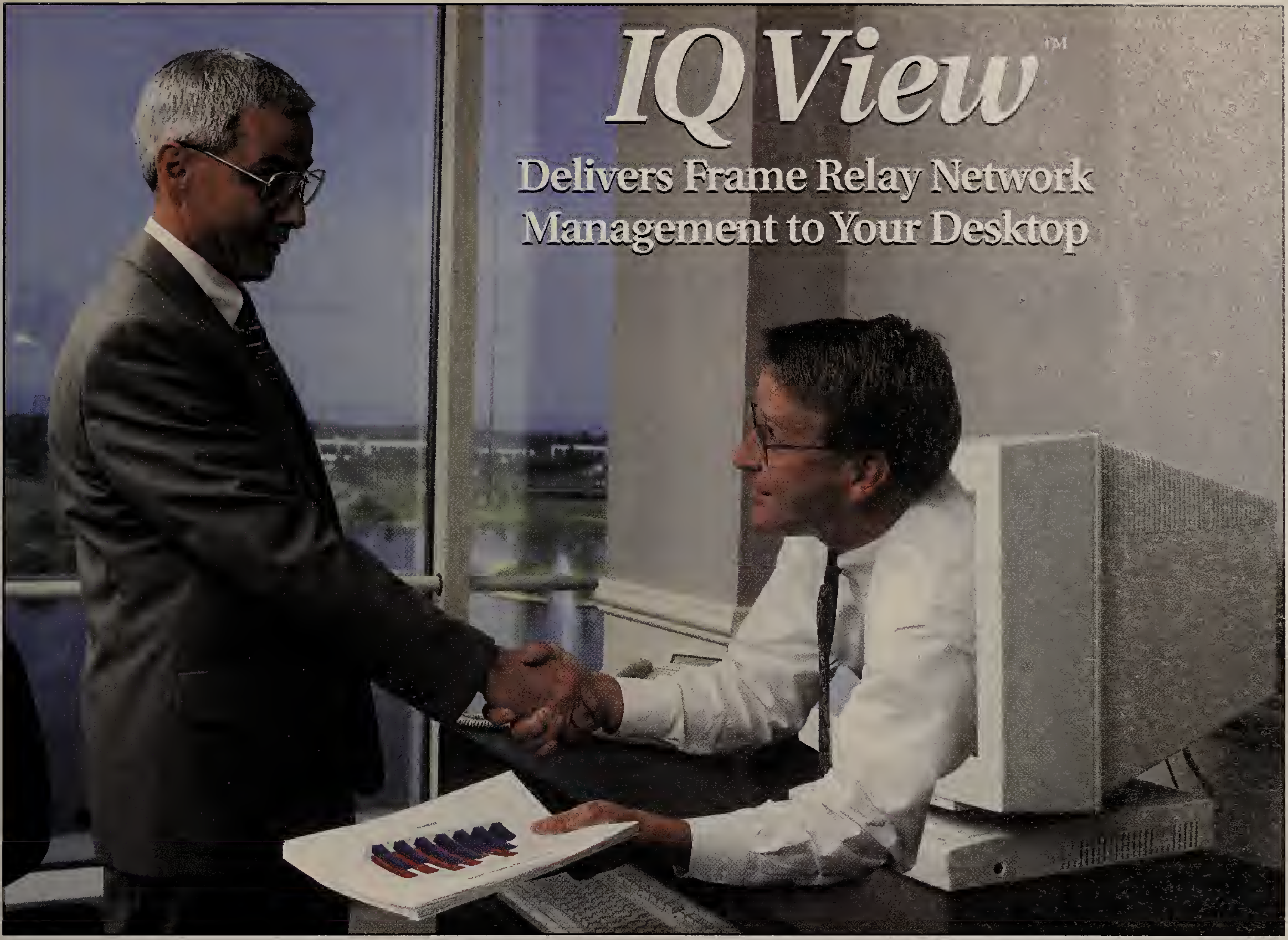
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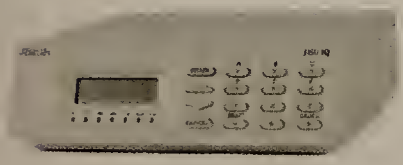

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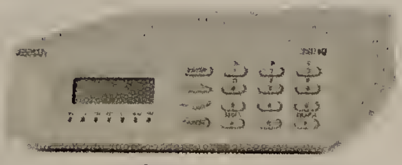

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Application development

Java portability is here — sort of

By Chris Nerney

Ever since Sun Microsystems, Inc. unveiled Java in 1995, many application developers have counted on the programming language to lead them to the promised land of platform independence.

However, in the wake of recent announcements by Microsoft Corp. and Hewlett-Packard Co. — both companies unveiled plans for Java software written to run on proprietary platforms — some industry observers say Java's write once, run anywhere utopia is becoming increasingly unattainable.

But many developers say Sun's promise that Java applications will perform equally well across different platforms is more than a possibility — they say Java applications can be ported today.

"Very significant applications written in Java can be moved around to multiple platforms, and we know because we've done it," says David Litwack, founder and CEO of SilverStream Software, Inc., a Burlington, Mass., start-up that sells a Java-based Web application platform.

Litwack says his company's Java applications server, originally written to run on Windows NT, was easily ported to a Solaris platform.

"The SilverStream applications server is 600,000 lines of code and is the largest commercial Java application that exists, as far as we know," he says. "And we were able to port it in one day."

Programmers at one global financial institution are developing Java applets and applications on Sun UltraSPARCs and then cross-checking the programs on a PC running NT 4.0.

Another user, insurance industry giant Wausau Insurance, is developing Java applications that can run on both Windows NT and 95.

Wausau programming project director Tom Holquist says one Java application currently in the works would allow customers to dial into a Web server at Wausau via the Internet to check the status of claims. That program was written once and can run on Wausau's NT and 95 servers.

The portability dream

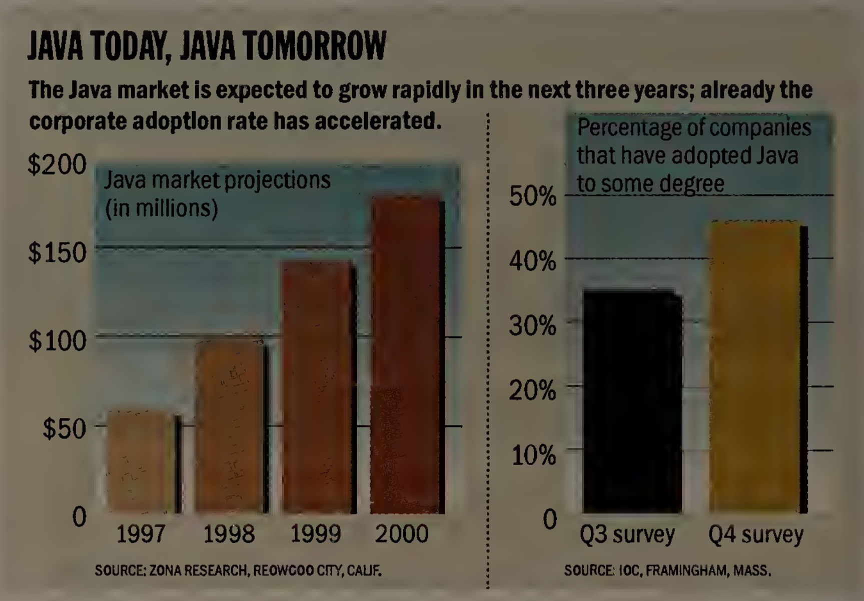
Programmers have long sought ways to reduce their workload and get products to market faster by writing code that could run on multiple platforms. And while the notion of portable applications is not new — some developers say portability can be accomplished to a limited degree using C++ — Java represented the first real hope that platform independence would become the norm.

Naysayers, however, have criticized Java for slow performance, buggy code and lack of portability. This prompted Microsoft in particular to aggressively pursue development of its own brand of Java.

Simon Phipps, IBM's chief Java evangelist in the U.K., bristles at the premise that Java applications haven't worked well across platforms.

"The core Java code itself has always worked pretty well on multiple platforms," he says. "It's only the display code that's been dodgy."

Phipps, one of the authors of a 1995 report that recommended Java to IBM, says cross-platform performance has improved greatly since early last year, when Sun's JavaSoft division released Java Development Kit (JDK) 1.1, a package of programming tools for developing Java applications. Before Version 1.1 arrived, portability was undermined by bug-ridden versions of JDK 1.0, he says.



JAVA TODAY, JAVA TOMORROW

The Java market is expected to grow rapidly in the next three years; already the corporate adoption rate has accelerated.

SOURCE: ZONA RESEARCH, REDWOOD CITY, CALIF.

SOURCE: IDC, FRAMINGHAM, MASS.

"Anyone who is doing serious Java programming is working with 1.1," Phipps says.

One specific Java application that has proven to be platform independent is Activerse, Inc.'s Ding. This browser lets users know at a glance whether group members are online and available to exchange messages, URLs and files in real time.

Paul Dyna, president of Cleveland-based start-up PreEmptive Solutions, Inc., says he has run Ding on several platforms while testing his company's product, a Java performance optimizer called Dash-O.

"There's no doubt you're starting to see these cross-platform applications," Dyna says. "So the platform independence is really there. It's not perfect, but it's by far better than anything we ever had."

Yes, Windows, too

And despite the impression created by the Sun-Microsoft conflict over Java, applications written using Sun's version of Java *can* run on Windows.

Shortly after Microsoft released its Internet Explorer 4.0 browser last September, Sun filed a lawsuit alleging that the product failed to pass Java compatibility tests.

Specifically, the suit claimed the new browser lacked two key components of JDK 1.1 — Remote Method Invocation (RMI) and Java Native Interface (JNI) — and included altered Java class libraries.

So does that mean that any applications created with JDK 1.1 — or compatible tools made by IBM, Symantec Corp. or Borland International, Inc. — won't run on Internet Explorer 4.0?

Not necessarily. The applications will run fine, as long as the developers don't use RMI or JNI in building the programs.

Writing applications without using these technologies is relatively easy for experienced Java programmers. Such portability roadblocks, however, can be daunting for the vast majority of less-experienced Java developers.

"Platform independence is a big selling point," Dyna says. "Still, you have to learn Java first, and you can't do it overnight."

Cross-platform trade-offs

One skeptical third-party vendor says platform independence in and of itself is a dubious goal.

"Whenever you do something cross-platform, you end up with a watered-down look and feel on some of the platforms," says Scot Wingo, co-founder of Stingray Software, an object-oriented software start-up, in Morrisville, N.C., which supports Microsoft's version of Java.

While acknowledging that platform independent Java applications can be written today, especially "if you don't involve a [graphical user interface]," Wingo doubts Sun's version of Java will ever truly be write once, run anywhere.

"You can write once, hobble everywhere," he says. "If your competition is doing native Windows stuff, and you come out with this watered-down version, you're going to get clobbered."

Developers now working with Java say that even programs written with the proper tools to allow cross-platform performance may need some tweaking.

But Robert Wilson, a senior programmer at investment bank Bear Stearns Companies, Inc., says tweaking is a small price to pay.

"If I were given a choice between doing multiplatform development, having to write a separate part for each of three platforms or doing it in Java and then having to track down what few problems remained, I would do it in Java," he says. ■

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I have a problem with users dialing in by a remote access server (RAS) to a site that uses the Dynamic Host Configuration Protocol to deliver IP addresses to clients.

The proxy server's Local Area Transport table is set up with the right IP range, the clients are logging in and are being authenticated correctly. The clients can see the internal network just fine, but when they try to use a browser to get to the Internet, they cannot get past the proxy server. I'd appreciate any suggestions as to where the problem is.

Via the Internet

First, make sure that IP forwarding is enabled on the server running the remote access service. Then, dial in and use the ping command to help determine the point of failure.

You should ping the IP address of the asynchronous port into which you're dialing, and then the address of the RAS' network card. Next try pinging the address of the private network card in the proxy server. If the pinging fails at this last step, you may need to establish a network route pointing to the RAS asynchronous adapter in the server. Lastly, ping from the proxy server back to the RAS asynchronous dial-in ports.

In addition, you should make sure the Web browsers are configured for use with a proxy server. Be careful if you are subnetting IP addresses on either the network card or the RAS asynchronous dial-up ports. With Microsoft Corp.'s IP implementation, you can't use the first and last IP address ranges available for the subnet mask, because Windows NT can't handle a subnet mask of all ones or all zeros.

Depending on the version of NT running on the RAS and the proxy server, you may need to apply the latest NT Service Pack as well as any appropriate hot fixes or specific updates for TCP/IP. Check support.microsoft.com for the latest listing on updates appropriate to your configuration.

Parallel processing boosts router performance

By Mark Cree

Network forwarding devices designed with dedicated silicon-based routing and switching ASICs will likely fail to keep pace with the growing performance and processing needs of today's networks.

A new technology promises to help drive future backbones: massively parallel routers.

Massively parallel routing systems in the backbone can process packets or cells in real time. That lets the routers establish network quality of service, dramatically increasing network intelligence and boosting router performance.

The fundamental problem with existing router/switch designs is that they continue to follow a development cycle that worked well when network traffic growth was measured in double digits.

The traditional approach is to find or build the biggest bus — and more recently, switch fabric — possible and then port existing software into accelerated hardware. With the Internet and corporate intranet installations growing by as much as 1,000% per year, traffic generated will quickly outpace products developed with traditional designs and dramatically reduce their useful lives.

What's needed to move the industry forward is a new approach that focuses resources on the real problem: processing power.

Routing, bridging and switching are really only different levels of data processing. Complete routing requires a lot of CPU cycles with table lookups and other header processing, while bridging and switching require less.

An architecture able to manipulate and process data at multigigabit rates easily can forward at the same rate. That's where the massively parallel approach to routing comes into play.

Parallel processing routers are different from generic gigabit router and switch products because they view incoming data as a stream of packets instead of individual packets. With parallel processing, the incoming packet or cell becomes an instruction set for the router's parallel CPU.

Massively parallel systems solve processing and data manipulation issues by distributing network intelligence over several devices or CPUs.

While one processor handles application and protocol processing for the datastream, another performs lookup, queuing and prioritization for the datastream. With this approach, routing, switching and bridging decisions become rules applied to the datastream by the processors.

Vendors build parallel routing systems in two ways. Some use a mesh of CPUs in one device to process frames in parallel (Neo Networks, Inc.). Others mesh complete devices for scaling total system throughput (Pluris, Inc. and Neo Networks). Although each approach is different, both move processing power close to the bottlenecks and distribution tasks.

Window of time

On a 1G bit/sec connection, there is only about 0.6 msec to operate on an incoming 64-byte packet. In that time window, very few operations beyond bridge/route table lookup can happen when processing in a serial mode.

Fast table lookup performance is critical in any system and quickly consumes the majority of the time window unless you perform operations in parallel.

Parallel processing systems perform multiple operations in parallel during the 0.6 msec time window. Neo Networks' approach embeds CPUs into Application Specific Integrated Circuits that run routing/switching software. As a packet is received, it is parsed and its components are sent to different CPUs for processing in parallel during the same time window.

Route lookup occurs at the same time as packet characterization for security, traffic shaping, real-time monitoring and the enforcement of other network policies that may operate on data from any part of the Open Systems Interconnection model.

Parallel systems can do the following:

- Support advanced network services such as quality of service policies
- Support high-performance backbones
- Provide longer product life cycles because code is not fixed into silicon

The bottom line

The net benefit of processing data in parallel is that the device makes data characterization decisions within the same time span in which Layer 2 and 3 forwarding decisions are made.

Advanced data characterization facilitates establishing networkwide policies and leads to more intelligent networks. Future routing/switching architectures must advance network intelligence and performance.

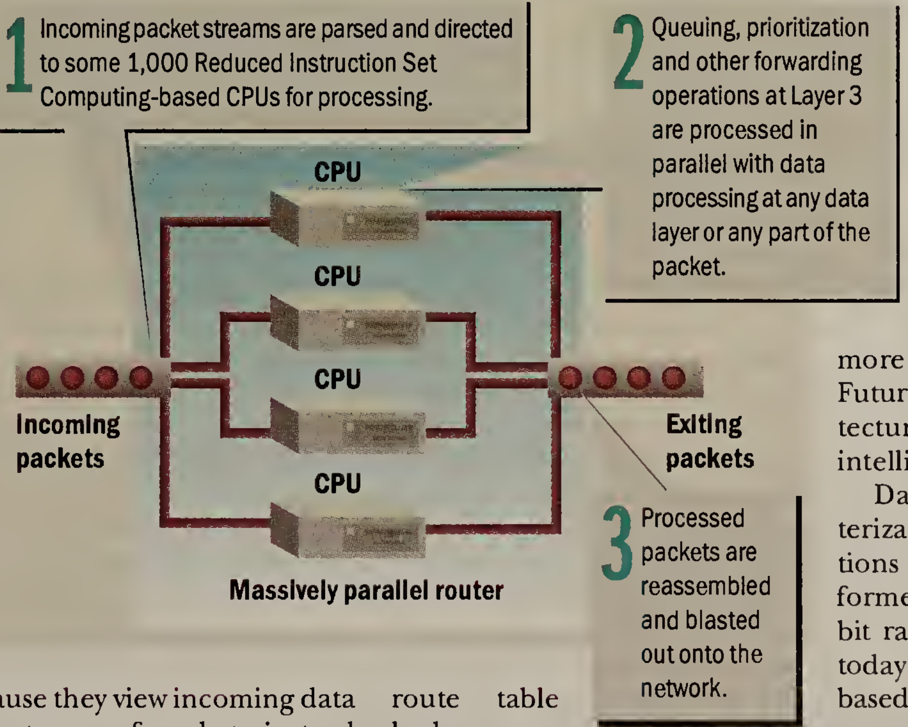
Data forwarding and characterization are separate operations that will need to be performed at multigigabit and terabit rates to satisfy the needs of today's Internet technology-based networks.

Cree is vice president of marketing at Neo Networks, a maker of massively parallel routers. He can be reached at mark@ neonetworks.com.

HOW IT WORKS

Massively parallel routing

Massively parallel routing systems process Layer 3 lookup and data packet processing in real time, significantly boosting the throughput of any networks they anchor. Operating at speeds up to 400 million packets, frames or cells per second, massively parallel routers can guarantee service levels for multimedia, security and distributed management applications.



1 Incoming packet streams are parsed and directed to some 1,000 Reduced Instruction Set Computing-based CPUs for processing.

2 Queuing, prioritization and other forwarding operations at Layer 3 are processed in parallel with data processing at any data layer or any part of the packet.

3 Processed packets are reassembled and blasted out onto the network.

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EDITORIAL *insights*

Mark this one down on your N+I agenda

A few weeks back, I challenged six leading thin-client companies to take part in a special presidential-style debate at NetWorld+Interop Las Vegas.

I'm happy to report that all the companies — IBM, Sun, Microsoft, Wyse Technology, Neoware and Network Computer, Inc. (NCI) — agreed to join us in the "Thin Client Face-off," scheduled for 10:30 a.m. to noon, Tuesday, May 5. Executives from those companies will face questions from a panel of experts, one another and the audience. Here's the lineup:

Our panel of experts:

- John Cox, senior editor, *Network World*
- Eileen O'Brien, director of International Data Corp.'s Enterprise NC (Network Computer) program
- Nicholas Petreley, editor in chief, *NC World*

Our vendor executives:

- Howie Hunger, director of channels and marketing with IBM's NC division
- John Frederiksen, group product manager, Microsoft
- Jeff Menz, director of product marketing, NCI
- Edward Callahan Jr., president and CEO, Neoware
- Steve Tirado, director of Java Desktop Systems, Sun
- Jeff McNaught, senior director and general manager, Wyse

The timing couldn't be better for this session, with so much going on in the thin-client market and in the world of Java — a critical component in the plans of many of these companies.

As we reported last week, Sun is finally ready to deliver its heralded JavaStation NC. In the two years since the JavaStation concept was aired by Sun, a good deal has changed in the thin-client world. Market-shapers Microsoft and Intel, both of which initially pooh-poohed thin clients, have since outlined their own thin-client strategies. Microsoft, in particular, is hustling to roll out its Windows Terminal Server, which serves up applications to a new breed of Windows terminals.

Sun and others had lots to say about Java at last week's JavaOne conference, where plenty of new Java tools were introduced. But the biggest announcement of the week came from the federal judge who slapped Microsoft with a temporary injunction against using the Java-compatible logo. That was at least a temporary victory for Sun, which only the week before was facing another apparent defection from the pure-Java community when HP announced plans to develop its own Java Virtual Machine technology. (By the way, join our online conference on Java in the enterprise at www.nwfusion.com.)

During the N+I Face-off, we'll get answers to the big questions about thin clients. Mark this session down on your calendar, and be sure to prepare some questions of your own.

John Gallant, editor in chief jgallant@nww.com

Intranet Applications • Dale Dowdie

The next battlefield for Microsoft: E-commerce

As the debate regarding whether Microsoft has a monopoly on computer desktop operating systems grinds on, a more important question is being overlooked: How does Microsoft intend to use its desktop dominance to capture additional markets?

While Microsoft's competitors are looking for the government to declare war on the desktop operating system juggernaut, Microsoft is looking to expand into other markets. By the time its competitors and the government react, it may be too late.

Microsoft learned a valuable lesson from Netscape: If you give it away, they will come. So when Microsoft wants to enter a new market, it simply offers products at a price customers cannot refuse. Add to this Microsoft's domination of the desktop operating system, desktop application and PC server markets, as well as its rapid movement into the enterprise server and management markets, and you get the picture of a restless giant that will not be deterred — no matter what the government and its competitors do.

Enter electronic commerce. This fledgling industry offers many opportunities as well as problems. More and more consumers are making purchases online. Companies are finding it much easier and less expensive to start storefronts online than on the street. Some sites, such as Amazon.com, never even had a storefront in the first place.

Electronic commerce requires Internet access, a Web server and software for taking orders, tracking inventory and visitors, creating ads and processing credit cards. Many companies offer software that handles these tasks, but most products are expensive, proprietary and difficult to use. On top of all that, you must purchase software from numerous vendors to put together a complete electronic commerce solution.

But, using knowledge and expertise gained through its acquisition of eShop, Inc., a provider of online buying and selling technology for the Web, Microsoft has put together Site Server 3.0. This is the product that will position Microsoft to play a dominant role in the electronic commerce market.

Site Server 3.0 provides all the basic requirements for an electronic commerce site in a single package. It includes a push server, graphical log analysis tools, direct mailer, ad server and sophisticated business-to-business commerce capabilities. Even better, you can download the beta product, which is very solid, for free from Microsoft's Web site. The finished product is expected to ship in the second quarter of this year; no price has been announced.

The only catch is that Site Server is Microsoft-centric. It requires Windows NT 4.0, Internet Information Server 4.0, Internet Explorer 4.0, and relies heavily upon ActiveX and Active Server Pages.

Although Site Server may not meet everyone's needs entirely, it will fulfill most small to mid-sized companies' electronic commerce requirements. No doubt Microsoft also will make it attractive for Internet service providers to offer Site Server Commerce Edition to their customers.

The browser wars are over; Microsoft won. While competitors continue to skirmish futilely over market share in the browser arena, Microsoft is moving into electronic commerce, where it is trying to establish its operating system, Web server and Web browser as the de facto standards.

It may well take more than the Justice Department to stop Microsoft. Maybe that is what has its competitors so worried. But perhaps the battle should be fought with new technology and savvy business practices, not government intervention. Microsoft has never created a truly original technology platform; it has simply made better products than those that previously existed.

Microsoft built it and people came. It looks like electronic commerce is the next battlefield.

Dowdie is the CEO of Intellitech Consulting Enterprises, Inc., a Massachusetts-based technology consulting firm. He can be reached at ddowdie@intellitech.net.

MESSAGE QUEUE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

No acquisition planned

In an industry rife with acquisition speculation, even the best publication can succumb to reporting on false rumors. Unfortunately, this happened in an otherwise well written and well researched article on Xylan ("Xylan CEO targeted by gunman," March 9, page 6).

The article links a stock buyback program that was announced in January to a rumor that Xylan "was in play in financial trouble." The investment community is aware that Xylan is executing a stock buyback for two good re sons: Xylan's stock has been undervalued, and the company needs the

Yankee Ingenuity • Howard Anderson

Comdex planning leads to future shock

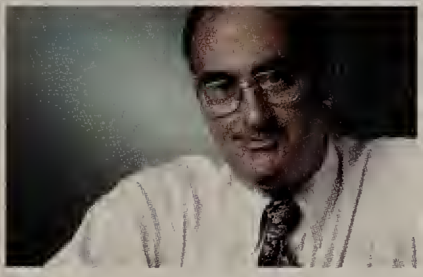
You've been to this meeting.

You're on an advisory board that is plotting the future of technology and, more specifically, the future of Comdex. The refreshments contain enough cholesterol to guarantee that no one in the room will even see the future. The attendees are a gaggle of futurists, all with their own agendas. The goal is to think up topics that will entice the 220,000 people who typically attend Comdex each year to keep coming back.

Oh, the obvious choices are there — electronic commerce, push technology, wireless gear. But how do you really think about the future? Is there a methodology that works?

It's easy to plot out the next 10 years because chances are no one will remember what you predicted. But it's damn hard to figure out what technologies will be most important 36 months from now, which is the normal time horizon in which we live.

A few years ago, the folks at Citicorp tried to predict the future of banking and technology. In an exercise designed to help them think "out of the box," the Citicorp folks looked back to the end of the last century to find out what planners were predicting. The amazing thing was that the planners got some of it right.



Nineteenth-century futurists were thinking about a magic "coal" that would fit into stoves and burn forever. Not all that far off from nuclear fuel. They envisioned "flying buggies" that would dock at the end of buildings, like horses. Kind of like the cars that fill up your office parking lot. In almost every case, they saw potential future technology, but they defined it too narrowly.

The Comdex planning meeting was interesting because substantial time was spent figuring out how the home of the future will play out. Today, according to The Yankee Group's statistics, there are 57 million people in the U.S. alone who work from home. There are 7.1 million small businesses in the U.S. that will spend $11 million on technology this year. There are 16 million technologically advanced families in the U.S. and another 32 million that have some degree of technology, such as a PC, in their homes. Maybe 25 million of us logged onto the Internet last week, and even more will do so this week.

Consumer electronics has become the ultimate hot-box business. The hardware guys come out with the next gizmo — Digital Versatile Disc (DVD), for example — and sooner or later, your kid and mine are trashing their records/tapes/CDs and marching off to replace everything, armed with your credit card. The problem is, the world isn't hot boxes anymore — it's networks. Soon you'll be more likely to buy music over the Internet than from your consumer electronics store.

So we know the consumer electronics industry is going to have its head handed to it. We just aren't sure exactly how.

Imagine you are Howard Stringer, president of Sony Corporation of America. Your job is to take all of the Sony businesses and tie them into a super brand. You have movie theaters and movie companies, you own music labels and have long-term contracts with artists. You *are* consumer electronics. Now what do you do? How do you protect your entrenched businesses and brands and build something new that ties together form and function using networks?

Right now we are up to our ears in enhanced call centers, IP telephony gateways, traffic analysis and TCP/IP. But in a larger sense, we are going to move all this technology downstream to "civilians."

Think of Futureworld as one Big LAN. How big? Currently there are 250 million Americans and perhaps 85 million of us have e-mail addresses. We send e-mail like crazy. Twenty years ago, about 100 million e-mail messages were sent per year, according to The Yankee Group figures. This represented 1/10th of 1% of the amount of first class mail, which was 135 billion pieces. Back then we put our finger to the wind and hypothesized that by the end of the decade, the amount of e-mail would be equal to that of first class mail. Guess what? It happened last year — 185 billion e-mail messages vs. 184 billion pieces of first class mail.

Now, figure that the 85 million of us with e-mail addresses not only send e-mail, but also enclose files — and those files are getting bigger. Further, assume that not only do we have connectability over the Big LAN, but so do all the devices we build. For example: You get up in the morning, step on your scale and a message is sent to both your kitchen ("start the coffee, lock the refrigerator") and your weight loss clinic. Or you become a registered member of the Mariah Carey Internet Fan Club and her new music is downloaded automatically to both your PC/home entertainment unit and car stereo system — and your credit card is billed.

We used to think networks were large if they had 1,000 users, then 10,000 users. Now we have to think about networks capable of handling one billion users, some of which will be machines talking to machines. All of us will have four or five wireless devices and perhaps that many wired devices, and we will need addressing schemes that are two orders of magnitude more powerful than what we have now.

In fact, the most powerful person in the Year 2008 will be the Ruler of Global Naming and Addressing. And we will all genuflect and kiss his or her virtual ring.

Anderson is founder and president of The Yankee Group, a Boston-based consultancy. He tries to keep his skepticism from degenerating into rampant cynicism, a battle he appears to be losing. He can be reached at handerson@yankeegroup.com.

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shares to support rapid employee growth.

As far as being acquired, we're not sure why we would need to be. In the most recent quarter, Xylan sales grew 55% compared with the year-prior quarter. Earnings growth was commensurate. None of the other top six campus switch vendors, including Cisco, came close to matching that growth rate.

David Rodewald
Director of corporate communications
Xylan Corp.
Calabasas, Calif.

Habit forming

After reading your editorial "The seven habits of highly effective net managers" (Feb. 23, page 42), I understand why Dilbert is so popular.

In our society, an ever-increasing schism has formed between the two general types; those of substance and those of superficiality. Technicians, scientists, engineers and soldiers make up the substance group. They rely on a clear and unfettered view of the objective reality that does surely exist. Politicians, teachers, artists and managers (among many others) have become the superficial group. It is the last of these that worry me most.

When managers take the superficial paths marked "Have lunch with the right people" and "Weasel your way into the hot projects," they do more than perpetuate the Dale Carnegie school of thought and its erroneous acceptance of manipulation; they move us closer to the brink of accepted ignorance and political correctness as the norm.

If capitulating to superficiality is the current trend and measure of successful management, then give me failure.

Curtis Deslatte
Data communication specialist
Pacer Infotec, Inc.
Portland, Ore.

Mr. Fix-it

Regarding Mark Gibbs' column "Facing facts: We're digital mechanics" (March 2, page 58):

Users should not be expected to maintain their own PCs, nor do we expect everybody who drives a car to perform major engine repairs. But when your car's oil light goes on, you should be aware enough to pull over at the next gas station and add a quart.

Maybe we are nothing more than digital mechanics, but even a mechanic can't do much for your car's reliability if you let the coolant and oil run low and ignore the trouble lights.

Gregory Kirk
Network engineer
Epic Management L.P.
Redlands, Calif.

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Letters about digital mechanics

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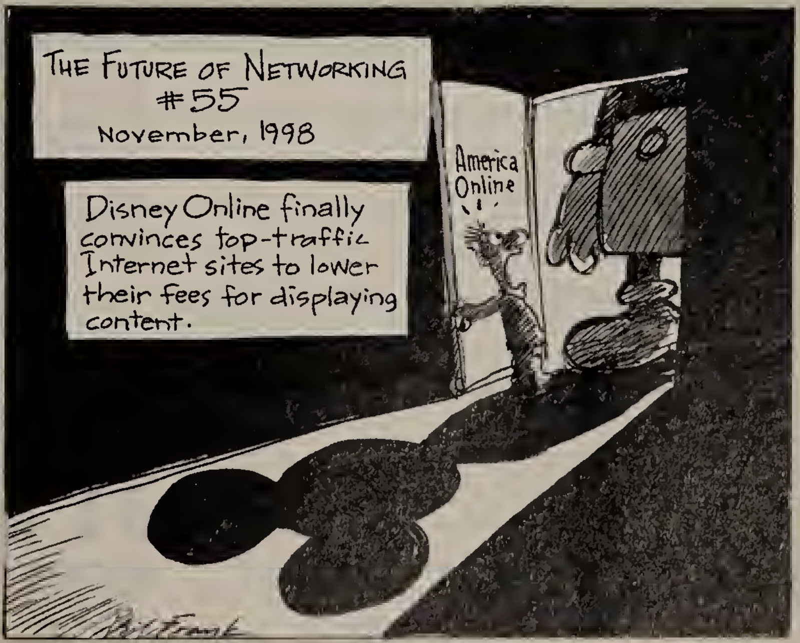

THE FUTURE OF NETWORKING
#55
November, 1998
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America Online
Phil Frank

Phil Frank and Joe Troise baba@sfgate.com

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FEATURE

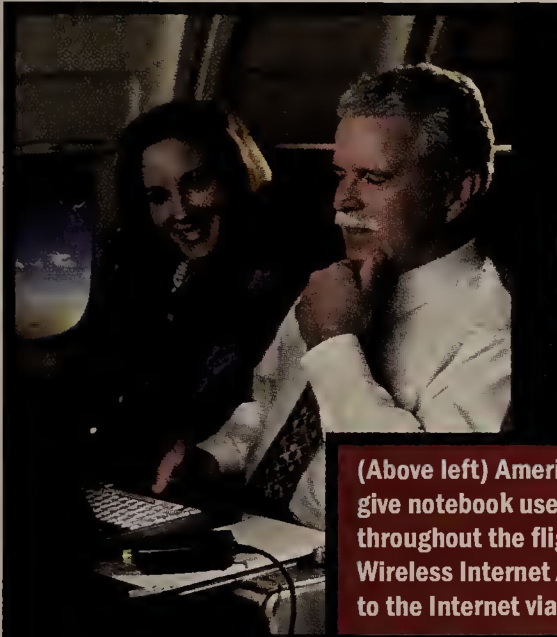
High-tech hospitality

(Clockwise from top left) The Iport high-speed network carries data over existing phone wiring; Atcom/Info's Internet Kiosk and GTE's Cyberbooth are taking flight at airports around the country.

Continued from page 1

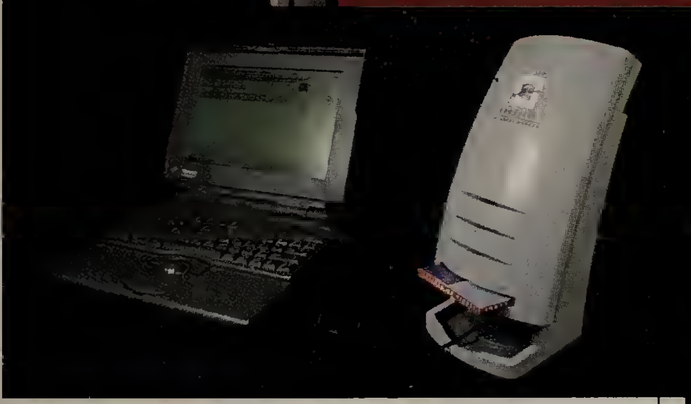
The industry is clearly taking a shotgun approach. Influenced by partners with a variety of vested interests, a handful of enterprising hotels are spraying the market with a variety of network solutions and are hoping that at least one will hit the mark.

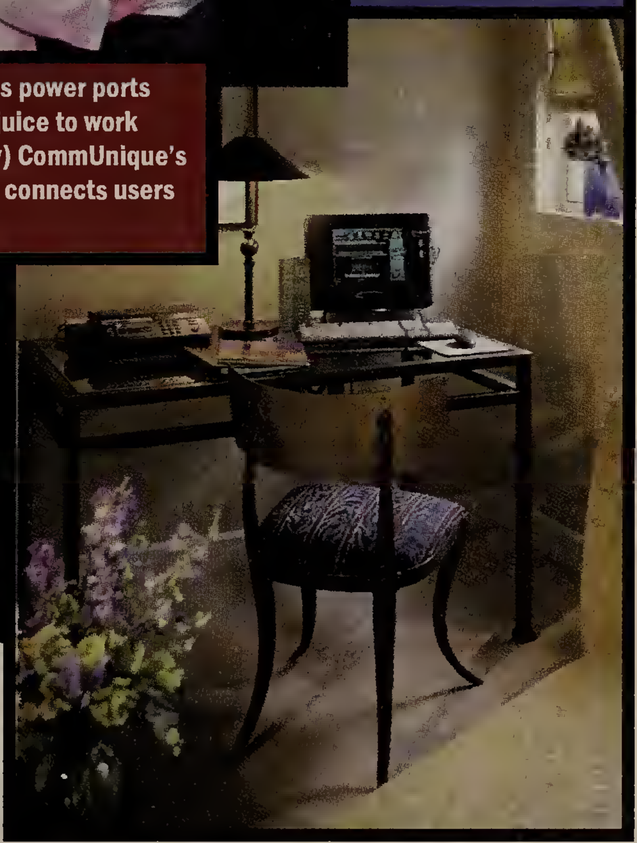
Some initiatives target the one-third of business travelers who carry notebook computers, while others focus on the majority who don't. Solutions are based on what the hotels' partners have to sell, including Ethernet, Digital Subscriber Line (DSL), cable TV, ISDN and wireless. Many schemes entail scary reconfigurations of notebook adapter and device driver settings that could spell trouble when road warriors return to home base.



(Left) Surfing the Web from a Hilton Internet station. (Below) A high-tech suite at Hotel Vintage Park in Seattle.

(Above left) American Airlines power ports give notebook users enough juice to work throughout the flight. (Below) CommUnique's Wireless Internet Access box connects users to the Internet via radio.





The bleeding edge

Most hotels are starting from a rather primitive technological base. Many still use proprietary systems, and about half haven't upgraded their wiring infrastructures in at least 25 years.

"The cable TV coax is in fairly good shape, but the telecommunications wiring is mostly Category 3," says Jules Sieburgh, vice president of hotel systems for InterContinental Hotels Corp. and co-chair of the American Hotel & Motel Association's telecommunications and technology committee.

Because hotels avoid investments that don't have a clear return, many are relying on partners such as in-room entertainment companies to install enhanced connectivity amenities. These third parties tend to be consumer-oriented and sometimes don't understand the needs of business travelers.

A few technically sophisticated hotels already provide their guests with Ethernet connectivity. The AT&T Learning Center conference facility and hotel in Basking Ridge, N.J., has wired its 171 guest rooms with Category 5 cable and fiber, although the latter is not being used yet.

"I walked in and my room had Ethernet, ISDN and two [plain old telephone service] lines," said John Morency, vice president of network solutions for Renaissance Worldwide, a consultancy in Newton, Mass. "I thought I'd died and gone to heaven. The facility had all the amenities of the big hotel chains, but all this connectivity, too."

Similarly, the Washington Duke Inn, a 164-room hotel on the Duke University campus in Durham, N.C., is an Ethernet-ready facility. Guests can plug their notebooks into the RJ-45 ports in their rooms and get high-speed Internet access.

Both of these solutions assume that the guest arrives with an Ethernet adapter, and they work best if the guest's corporate network has implemented Dynamic Host Configuration Protocol (DHCP). Adapters configured with static IP addresses, as many still are, must be manually reconfigured for the hotel network. Guests who check out without resetting their adapters won't be able to connect to their corporate networks when they get home.

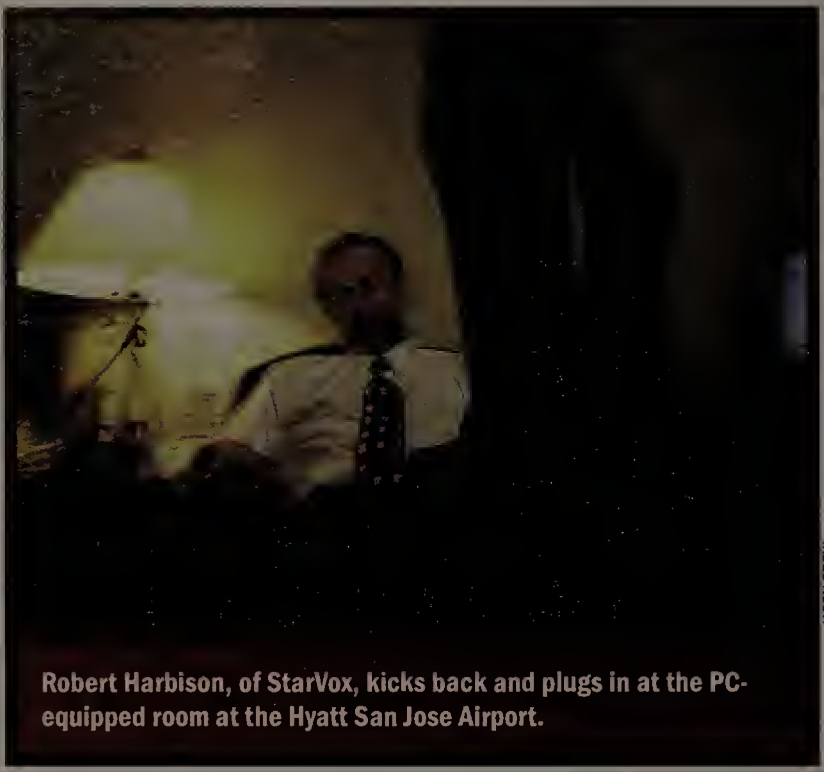
This is too much of a hassle for most folks to bother with, even if they know how to do it. One industry executive, Richard Kerr, vice president and general manager of travel and hospitality services for Litton Enterprises Solutions, a systems integrator in Woodland Hills, Calif., concedes, "When I visit our field offices and need to connect back to the corporate network, I don't take the time to connect to the local network if a dial-up phone line is available."

The AT&T Learning Center and the Washington Duke Inn are coping with these support problems, but they are in rarefied environments that serve network-savvy clientele. The more typical hotel offering Ethernet connectivity would probably have to keep a "cybercierge" on duty around the clock — an expensive proposition.

"In most hotels, connectivity must be totally transparent," says Robert Harbison, chief technology officer for StarVox, Inc., a computer telephony start-up in San Jose, Calif. "Until DHCP is fully standardized and fully adopted, this will not be the case with Ethernet adapters."

Ethernet with a twist

While newly constructed buildings have plenty of Category 5 cable, most hotels must figure out ways to make do with less. Microsoft Corp. is partnering with San Diego-based Internet kiosk provider Atcom/Info and CAIS Internet/CGX Corp. to offer guests a high-speed Internet access system that uses existing telephone wires. The service uses CGX's OverVoice technology to link Ethernet data ports to the Internet over the same wire that carries voice calls, bypassing the PBX.



Robert Harbison, of StarVox, kicks back and plugs in at the PC-equipped room at the Hyatt San Jose Airport.

JASON GROW

The CGX infrastructure works with Iport software co-developed by Atcom/Info and Microsoft Consulting Services. A Microsoft BackOffice application, Iport provides the user interface and can integrate with the hotel's billing system.

Like other Ethernet solutions, Iport raises the same adapter configuration issues. Currently you need a DHCP-configured adapter to use Iport. However, a static-IP version is in the works. According to Stan Julien, hospitality industry marketing manager for Microsoft, the Iport software can change and then restore the address settings for a notebook's adapter.

"I'm very skeptical about that — I'll believe it when I see it," says InterContinental's Sieburgh, expressing a sentiment many network administrators seem to share.

"If this could be done cleanly, it is a very exciting development for business travelers," says Sandra Lieb-Gieger, manager of end-user support and operations for Andersen Consulting, Inc., in New York. "But the idea of software that actually modifies a notebook's configuration makes me very nervous, both from a network administration and technical support standpoint.

"A lot of our customers are not highly technical, and a warning that using this service will change their configurations may not worry them. When they get to the next office and can't connect to the network, they will blame us," Lieb-Gieger says.

Microsoft, Atcom/Info and CGX have begun commercial trials of Iport in several hotels around the country (see graphic). General release is scheduled for midyear.

Another in-room access solution eliminates wiring altogether. CommUnique, Inc. plans to ship CommUnique Wireless Internet Access in the third quarter. The box will sit on a desk in the hotel room and provide 38.4K bit/sec Internet access. It includes a floppy disk with the necessary device driver, as well as an RS-232 cable that connects to the notebook's serial port.

"It's an unmetered solution, but if the hotel can bump the room rate up $5 when the boxes are installed, it will generate net revenue in the first month," says John Velie, vice president of marketing and sales for CommUnique, in Alameda, Calif.

The Four Seasons Hotel, in Austin, Texas, uses wireless technology to link Ethernet segments on guest floors to a T-1 Internet connection. Aironet Wireless Communications, Inc.'s ARLAN 3000 LAN modules form a wireless backbone. There are wireless transmitters on every other floor, in restaurants and meeting rooms, and on patios.

Traveling light

But network solutions aren't much use to the majority of business travelers who still don't bring notebooks with them. Some hotels are catering to this segment by putting PCs, network computers or dumb terminals in rooms, or by using the television as an Internet display.

Veicon Technology, of Beaverton, Ore., offers hotels a thin-client Wyse Technology, Inc. terminal to install in guest rooms, conference centers and meeting rooms. This competes with cable TV solutions from companies such as On Command Corp., the leading provider of in-room entertainment systems.

On Command's solution employs a wireless infrared keyboard that guests can use to control the TV display. Hotels can cache and organize popular Web sites into a menu interface so guests can access them more quickly. On Command also is developing a cable modem add-on that will work with notebook users' Ethernet adapters. You can try the service at Hilton Hotels Corp. properties in San Jose, Calif., East Brunswick, N.J., and McLean, Va.

HIGH-TECH HOTELS

You can check out the Iport high-speed Internet access solution at the following hotels:

Bellevue Courtyard	Bellevue, Wash.
Embassy Square Suites	Washington, D.C.
Hillsboro Candlewood	Hillsboro, Ore.
Homestead Village	Bellevue, Wash.
Hotel Vintage Park	Seattle
Hyatt San Jose Airport	San Jose, Calif.
La Jolla Marriott	La Jolla, Calif.
Marriott SeaTac Airport	Seattle
Woodmark Hotel	Kirkland, Wash.

Sprint Corp. and Vail Resorts, Inc.'s on-mountain business center in the Eagle's Nest Lodge at Vail Mountain, in Colo., makes it easy to place that deal-making conference call or critical fax after you schuss down the ski slopes. The facility includes six PCs and a videoconferencing station, Bloomberg terminal, printer, fax machine and phones, and an Internet connection via a T-1 link. Usage is free on a first-come, first-served basis.

Paying up

Count on opening your wallet to pay for enhanced connectivity services, unless hotels can figure out another way to generate revenue from them. The San Jose Hyatt puts a PC and a Hewlett-Packard Co. OfficeJet printer/fax/copier in its rooms along with a notebook connection. Guests can pay 20 cents per minute or a flat rate of $6.95 per day. About 10% to 15% of the hotel's guests use the service.

The Claremont Resort, in Oakland, Calif., has Wyse terminals in 50 of its rooms. Guests have to pay $10 per day to use them. About 10% to 20% of the guests utilize the capability. The hotel charges up to $600 per day for T-1 service to its state-of-the-art conference rooms, which are very popular with Silicon Valley companies holding off-site meetings.

Other hotels simply hope that enhanced connectivity will help win your business. San Francisco-based Kimpton Hotel & Restaurant Group, Inc. operates a chain of boutique hotels on the West Coast. The company stocks its mini-bars with diskettes and other computer supplies and is rolling out the Iport solution in several locations.

"The majority of our business is corporate, and technology is now a necessity for the corporate traveler," says Stephen Pinetti, vice president of sales and marketing for Kimpton. "We make money by getting people to come back because they love our facility and services, and the Iport service has already generated additional measurable business." He estimates that 4% to 5% of the guests who check into the Iport-equipped hotels come specifically because of the new service.

Clearly, hotels are grasping at straws as they try to move into cyberspace. But their efforts are motivated by more than guest demands for better network connections. A more pressing concern is the ever-increasing volume of data calls that are going through their PBXes and tying up voice lines.

A 10-to-one guest-to-line ratio at hotels is common. While the average voice call is 15 minutes, the typical data call lasts 40 to 60 minutes. This growing burden is coming at a time when telephone credit cards are squeezing hotel revenues from phone charges. Some hotels are installing more trunks and using a concept called threshold billing, in which guests are charged for calls that exceed a certain time limit.

Power to the people

Business travelers are quick to point to the obvious — high-speed network connections don't do any good without a power source for your notebook. Hotel rooms often hide electrical outlets behind heavy headboards on beds, or place them where only housekeeping finds them of much use.

"I never travel without a 25-foot electrical extension cord," says one marketing executive who logs more than 200,000 miles of business

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Electrical outlets are extremely scarce in airport gates where business travelers spend a lot of time waiting for flights. One per gate is not an uncommon ratio, and road warriors fight over who gets to sit on the floor and use them. With some airlines, you will have better luck onboard the plane.

More than a year ago, American Airlines, Inc. started installing 12-volt power ports in first-class and business-class seats on aircraft used on long-haul flights. The company is making outlets available in coach, too, but it will take several years to get to the entire fleet.

Although in-flight power outlets may be fairly common in a few years, don't expect Internet connections to follow any time soon. You'll still need to get out your credit card and use the data ports in onboard pay phones.

But airlines are trying to make frequent-flyer lounges and airport gate waiting areas more conducive to computing. American Airlines is partnering with HP to put business centers in all of American's domestic Admirals Clubs. The first 29 centers have already opened and offer HP computers, printers and copiers, as well as diskettes and other supplies. The centers are available free to club members on a first-come, first-served basis.

GTE Corp. is working with American and other airlines to install Internet kiosks in airport lounges and terminals. These cyberbooths offer one or two self-contained access stations that provide 128K bit/sec Internet connections for 33 cents per minute. Some of the units offer enhanced

Veteran road warrior Richard Close, of Interliant, says speed isn't yet a big need for him.

PAM FRANCIS

Cyber-condominiums are wired for ADSL

A new type of high-rise is starting to dot the skylines of metropolitan areas, offering well-heeled city dwellers units with cyberviews.

Just as many hotels are striving to give their guests high-speed Internet access, developers are beginning to distinguish their properties with a similar amenity. Leveraging the economies of scale afforded by high-density housing, builders are deploying high-speed data networks in apartment and condominium complexes along with the more traditional infrastructures for electricity, plumbing, heat and air conditioning, voice telephony, cable TV and garbage disposal.

Homeowners and tenants can get a high-speed Internet dial tone at the flip of a switch, and for a fraction of the price they would pay if they were ordering the same bandwidth individually. Service providers can streamline operations by dealing with hundreds of customers at once. And buildings don't get punched with holes and decorated with cable spaghetti dripping down their sides.

There are two main approaches being used when outfitting homes with high-speed access. In the retrofit market, building owners are starting to deploy asymmetric digital subscriber line (ADSL) services. And developers are wiring new construction with lots of Category 5 and fiber, and are adding Ethernet building-area networks (BAN). Newfangled BANs link segregated LANs throughout a building.

GTE Communications Corp., a recently formed competitive local exchange carrier unit of GTE Corp., is now offering a special ADSL service aimed at multitenant properties in the Los Angeles area. Called ADSL OnSiteSM, the service went live last November at the 1,000-unit Mariners Village apartment complex in the pricey oceanside community of Marina del Rey, Calif.

GTE is using a customer-premises, equipment-based deployment scheme that doesn't require ADSL equipment at the central office. The property's telephone equipment room, which acts as a concentrator, is outfitted with Westell Technologies, Inc.'s rate-adaptive ADSL modems, an Ethernet switch and 2500-series routers from Cisco Systems, Inc. Each subscriber uses an ADSL modem, and a T-1 line links the equipment room to a local Internet service provider.

Residential Internet service that provides 680K bit/sec downstream and 256K bit/sec upstream bandwidth costs $125 per month. A business service that offers 1.5M bit/sec downstream and 384K bit/sec upstream speeds is priced at $700 per month. Prices include ADSL modem rental, e-mail boxes, Web hosting of a small home page and 24-hour support.

"I just love it," says Mariners Village resident Alan Wallace, who was using ISDN-based Internet access before the ADSL service became available. As CEO of InterActive Agency, an Internet marketing company in Santa Monica, Calif., Wallace spends a lot of time exploring the World Wide Web.

"I wanted to have the same type of performance at home that I was used to at work," Wallace says. "With the ADSL service, transferring files and updating programs over the Internet is like moving them from one local hard disk to another. I wanted to move, but I can't bear to part with this capability."

Mariners Village owner Doug Ring thinks the amenity will help bring in the tenants.

"By enabling people to work more efficiently and productively, ADSL will revolutionize the way condominium and apartment dwellers think about using technology from home," Ring says.

According to Richard Sekar, a product manager for Ascend Communications, Inc. in Alameda, Calif., DSL technologies in high-rise environments aren't under the same constraints that are holding up the deployment of ADSL in the residential local loop.

"High-rises don't have the same spectral compatibility issues, such as noise and cross talk, that you get in the residential local loop," Sekar says. "Aggressive ISPs like Megsinet in Chicago can offer this kind of service without having to become telecos with access to the local loop."

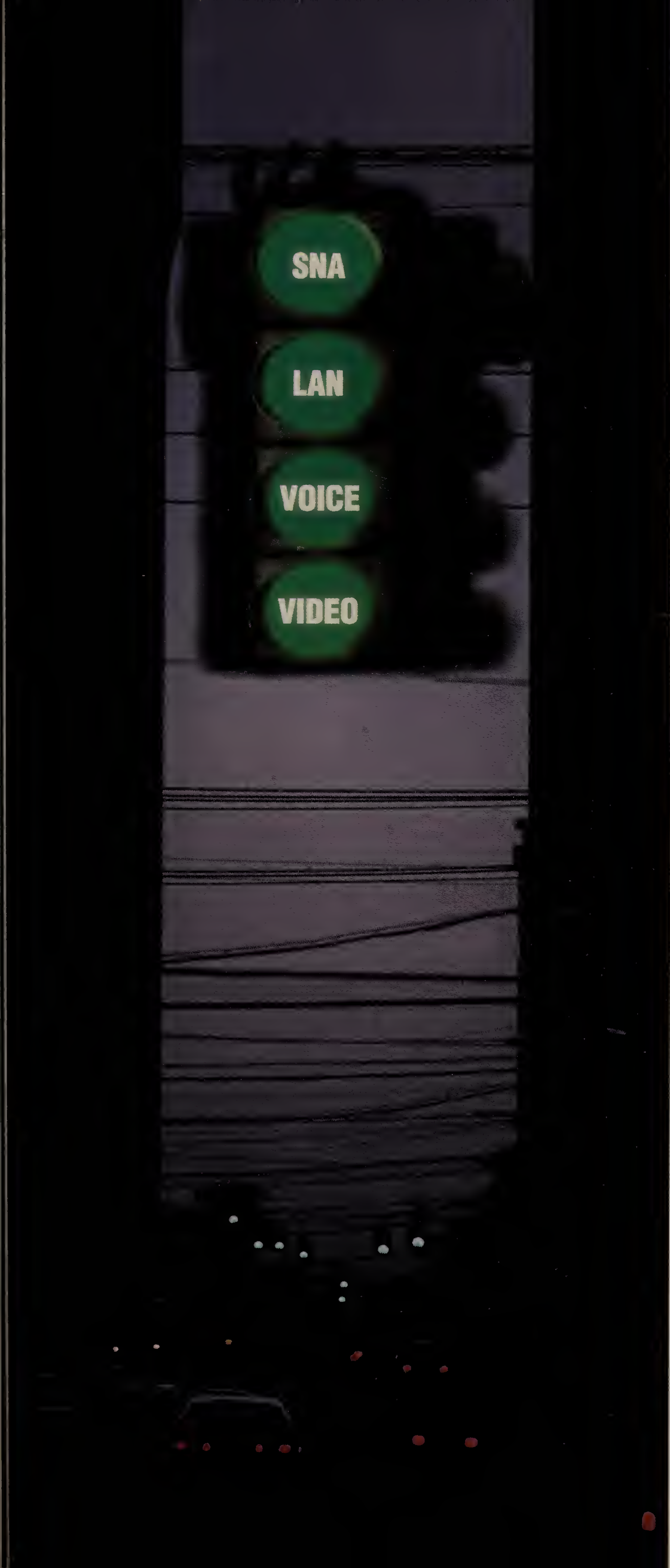
GTE offers a LinkIn program aimed at high-density housing in the carrier's local-access territories. GTE provides the high-speed infrastructure, and the owners and property managers market the services to their tenants.

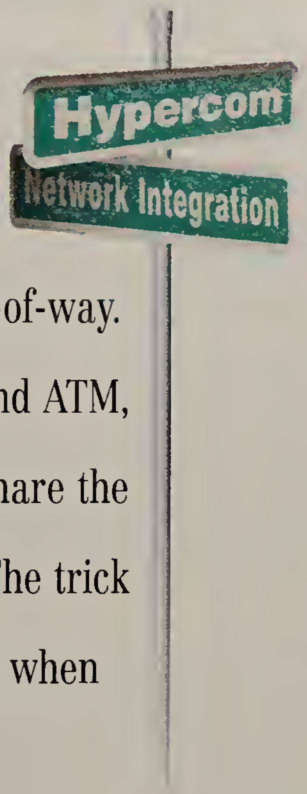
In the new construction arena, DualStar Technologies Corp. is using 3Com Corp. equipment to put Ethernet BANs in New York high rises. A 100M bit/sec Ethernet backbone and 10M bit/sec subnets give residents shared 10M bit/sec access to the BAN, which is linked to an ISP via a leased line. Units have Ethernet jacks that connect to Ethernet adapters in the residents' PCs.

Two of DualStar's first three "cyberbuildings" are in Manhattan: The Grand Millennium, a 300-unit facility with 200 apartments and 100 hotel rooms, and the 700-unit One Columbus Place apartment towers. The third cyberbuilding is Long Island City, a 500-unit cooperative in Queens.

Providers are still ironing out pricing for LAN-based Internet access service. DualStar's prices range from $49 to $130 per month, and experts say similar services could soon be made available for as little as $30 per month. However, the typical problems related to Ethernet configuration and support still need to be resolved.

— Susan Breidenbach





Give All Of Your Applications The Green Light

Directing traffic on the wide area network used to be simple: SNA always had the right-of-way. But now, thanks to Frame Relay and ATM, voice and video applications can share the WAN with legacy and LAN data. The trick is to give them all the right-of-way when they need it.

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According to a study based on 10 cyberbooths at the Dallas/Ft. Worth International Airport, there were 25,420 paid uses of the Internet access stations during an eight-month period ending June 30, 1997. One-fourth of the uses were repeat business, indicating a high level of customer satisfaction.

"Usage continues to increase," a GTE spokesman says. "Each unit is used two to three hours per day now, and the average user spends 10 to 12 minutes online."

Missing the mark

Many of the proposals that connectivity-solution providers are cooking up for the hospitality industry assume that business travelers want dedicated high-speed Internet access. At the moment, that may not be the case.

"I'm doing e-mail and file transfers, not videoconferencing," says Richard Close, senior director of Interliant, Inc.'s Education Services division in Houston and a veteran road warrior who logs more than 100,000 miles of business travel each year. "Even doing Lotus Notes replication over modem connections, speed is not an issue." To accommodate occasional guest requirements for high-speed connections, Close suggests that hotels provide a few high-speed stations in a central location that is open 24 hours.

But providers are clinging tenaciously to the belief that supply will create demand. "My impression is that enhanced connectivity is more important to the companies that want to install sophisticated technology in hotel rooms than it is to the business travelers who are using these rooms," says Carlo Wolff, technology editor for *Lodging Hospitality* magazine, in Cleveland.

"We don't see a lot of demand for it yet," agrees Litton's Kerr. "Business travelers very rarely access the Internet for surfing. They want a separate data line, and if they have one they can connect to the Internet or anywhere else. It's an acceptable solution, and for the moment, it's free."

Although Internet virtual private networks (VPN) are becoming a popular way to connect remote employees to the corporate network, many businesses are sticking to more private and secure remote access methods. And companies that do run VPNs may not benefit from high access speeds.

Go online for a host of information about the hospitality industry's high-speed network solutions, including:

- **An Iport white paper and downloadable thin-client application**
- **High-tech hotels**
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"DSL speeds in my hotel room don't do me any good when I'm going through routers on the Internet that are throttling me down," says StarVox's Harbison. "Until we get quality-of-service levels on the Internet backbone — determinate routing, determinate latency, determinate bandwidth — 56K bit/sec modems are all we need."

"The big wave won't be this year or next," says Geoff Griswold, director of information technology for Chervenak, Keane & Co., a New York-based consultancy specializing in technology usage in the hospitality industry. "The technology is available, but the hotels aren't going to invest in it that quickly. However, in five years Internet access in guest rooms will be as common as TV is today," he predicts.

Breidenbach is a consultant and freelance writer in San Mateo, Calif. She can be reached at sbreidenbach@usa.net.

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Axis scores with removable storage server

We thought Iomega Corp.'s Jaz drive was cool when it debuted in 1996 — a whole gigabyte of hard drive storage in a unit about the size of a pack of cigarettes. The only drawback was that each PC needed its own Jaz drive.

Axis Communications AB has taken the next logical step with StorPoint HD, a family of products that lets you snap a network connection onto a Jaz drive. Voila — instant file server! But unlike typical file servers, all the storage is removable. StorPoint HD stays in one spot but users on your network can own their own media and swap it in as necessary, to access seldom-used archived files or databases, for example.

StorPoint HD really is a family that comprises three products. You can think of StorPoint HD, the stand-alone version, as a SCSI connector on one end, an Ethernet adapter on the other and an embedded Web server in the middle. You can hook as many as seven Jaz drives to the SCSI connector.

StorPoint HD/T is similar to the stand-alone unit, but designed to plug into a 5 1/4-inch slot in a storage tower, in a manner similar to CD-ROM servers. Thus, if the tower has four slots, four StorPoint HD/Ts will let you string 28 Jaz drives off it.

Finally, StorPoint HD/4, which we tested, is a self-contained tower with four networked Jaz drives coupled with a StorPoint HD unit. It's a 4G-byte file server without the overhead of a network operating system.

Quick takes on high-tech toys by Test Center Director
Lee Schlesinger

Installation could hardly be simpler. To set up the hardware, you plug an RJ-45 network cable into StorPoint HD's network adapter and power it on. If your networked Windows or OS/2 clients are running NetBIOS, you don't need to do any software configuration; if you prefer to access the device via TCP/IP, you can use Address Resolution Protocol, Reverse Address Resolution Protocol, BOOTP or Dynamic Host Configuration Protocol to set up an address. You then can manage any StorPoint HD using its embedded Web server. Just point your browser at its TCP/IP address to set access rights and change network configuration parameters.

The StorPoint HD family's only drawback is its price. While the four-drive tower we tested can be found for a reasonable $2,239, the stand-alone unit retails for $850 to $1,000. That seems a bit steep to us, considering you still have to buy a $400 external Jaz drive to go with it. The cost of the external media is about $100 per gigabyte cartridge. ■

Net Results

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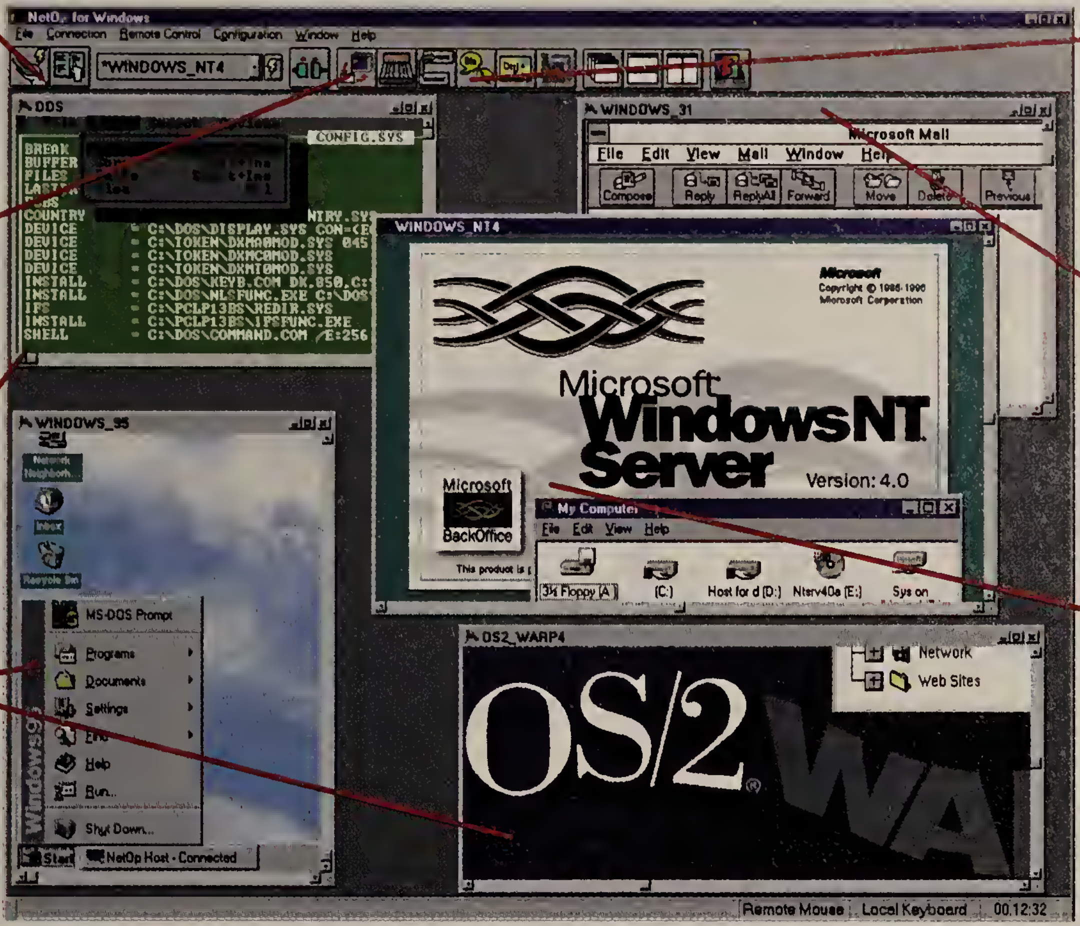

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Spy vs. spy

Security gurus share tips for guarding against foreign corporate espionage.

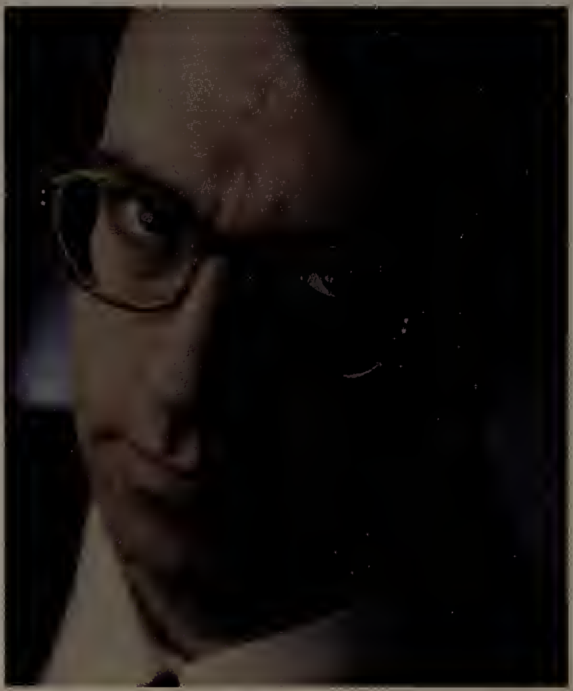
By Loretta Prencipe

A software engineer illegally downloads data worth an estimated $10 million to $20 million about plans for a new version of a well-known computer processor.

A Russian hacker breaks into a bank's network and transfers millions of dollars to accounts around the world.

China sends an undercover agent to the U.S. to learn about corporate America's greatest technology secrets.

Although these incidents sound like plots for James Bond flicks, each actually happened. When the cold war ended, many foreign intelligence agents who were suddenly out of work found lucrative employment in economic espionage.



Stevens Miller *warns clients that their Web site content could make them an easy target.*

JOHN RAE

Several foreign governments assist companies in business intelligence activities that further their national interests, according to congressional records and other published reports. Surprisingly, the offenders most often cited aren't usually thought of as U.S. adversaries — France, Germany, Israel and South Korea.

The reason comes as no surprise: It's the allure of cold, hard cash. U.S. firms spend more on research and development than many of our foreign counterparts. Some foreign interests figure it's easier and more cost-effective to acquire certain proprietary information from U.S. companies than to develop it themselves.

"Certain business information is more valuable than heroin," says Larry Watson, national program manager for the FBI's Awareness of National Security Issues & Response (ANSIR) unit. ANSIR regularly alerts U.S. companies via e-mail and fax to potential economic threats from foreign sources.

Intellectual property theft costs U.S. companies $100 billion per year, according to ANSIR estimates. The American Society for Industrial Security (ASIS), an Alexandria, Va.-based organization of security professionals, thinks the figure is much higher — around $300 billion per year.

There's great demand for customer lists, research and development data, product and process information, manufacturing and marketing plans, and security techniques. Companies in the high-tech, manufacturing and service industries are the most attractive targets, according to ASIS.

And don't count on the law to protect your company's assets. While the U.S. has the Economic Espionage Act of 1996 and extensive intellectual property and trade secret laws, other countries do not.

That means even if you have the goods on the bad guys, it may be hard to prosecute them, says Stevens Miller, a network security specialist for Decision Strategies Fairfax, LLC, an international investigative firm in Falls Church, Va. Borders can be a tremendous boon to foreign snoops and a hindrance to U.S. companies that are trying to stop criminals from exploiting proprietary data outside the country, says Miller, who also has a law degree.

Distance and physical security offer little protection in the high-tech world. Spies can snoop — legally or illegally — through your network or Web site, and can contact your employees, clients and vendors via e-mail or usenet groups.

To fight back, Matt Mancuso, a network security analyst with Price Waterhouse, in Baltimore, suggests you assess your current security risks, standardize your network and implement centralized audit and intrusion-detection capabilities. However, none of that will work if you fail to educate users about corporate espionage and are lax in maintaining a security compliance program.

The variables in network security — the mix of protocol, network setup and type of end user — are potential security weaknesses, Mancuso explains. Most companies haven't fully thought out where to apply certain controls for public or private data, particularly when it comes to the Internet.

For example, if your security policy calls for encrypting sensitive data before transmitting it over the 'Net, you need to define proper data classifications and where to apply the policy, Mancuso says. Pin down who truly needs access to sensitive or proprietary information and how to keep it secure.

KEEPING THE SPIES AT BAY

- Put on your spy cap and review your network from an adversarial point of view.
- Hit your Web page and change the protocol from HTTP to FTP. What's accessible?
- Drop the "anonymous" log-on to your network, or you're asking to be compromised.
- Get rid of dial-in administrator access to your network.
- Develop a network reconstruction plan.
- Consider hiring a full-time IT security professional.
- Change the management mindset. Security is a big enabler, not just another cost.
- Re-evaluate what information should be included on your company's Web site. Why give it away?

But protecting your network from spying activities isn't enough. Businesses need to rethink the free flow of information, according to Miller. "A clever investigator can infer a great deal from the information on your Web page," he says.

For instance, someone monitoring your company directory may be able to determine the type of projects your company is working on by examining changes in personnel. Think twice before posting this data, and ask yourself whether your company's Web presence makes your firm an easy target.

Naturally, it is better to plan ahead and protect your data before it is compromised, Mancuso warns. Once an intruder gains access to your data, not only will you have to rebuild your network security system, recompile compromised data and undergo downtime, but your company's income stream will suffer from lost opportunities.

Unfortunately, you may not know your systems have been breached until your trade secrets appear in your competitor's products. If that competitor operates in another country, good luck trying to recoup your losses.

"It's a fool's errand to believe you can prevent all corporate espionage," Miller says. "You just don't want to be the easy nut to crack."

Prencipe is a freelance writer and an attorney in Springfield, Va. She can be reached at LWPrencipe@mailexcite.com.

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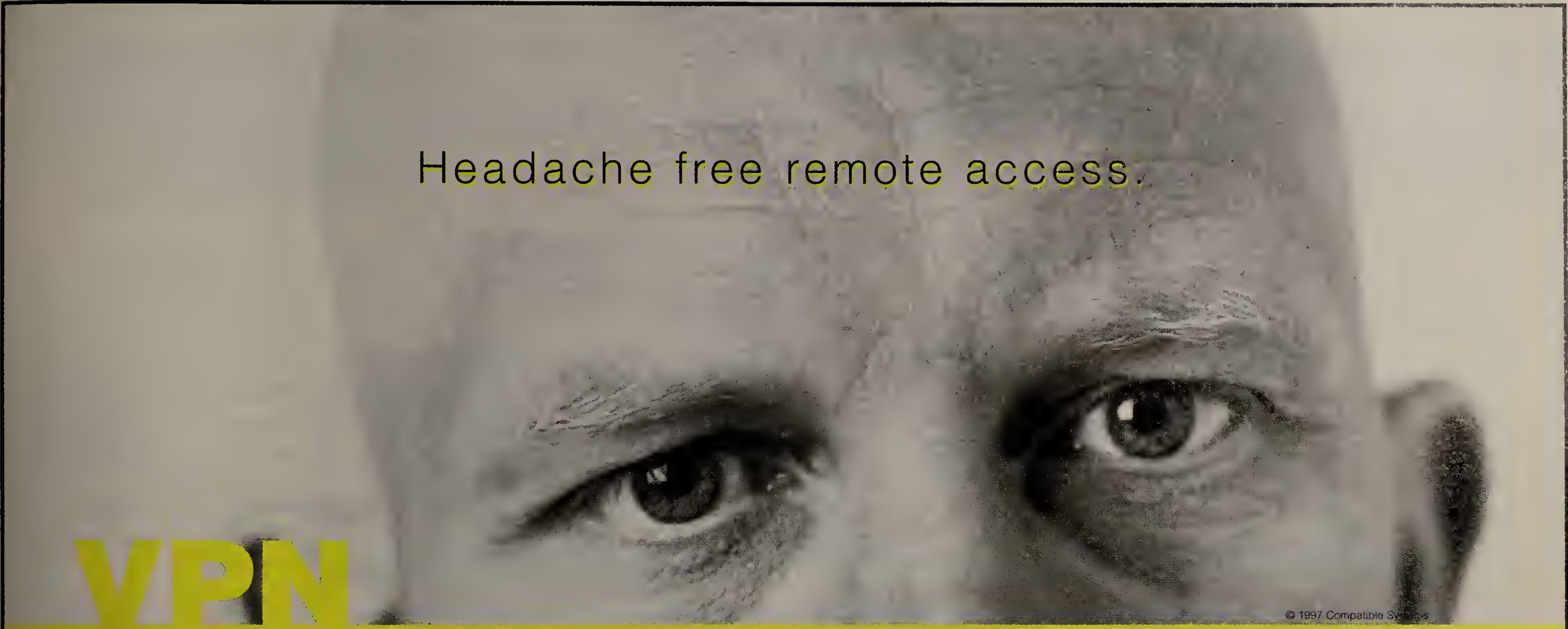

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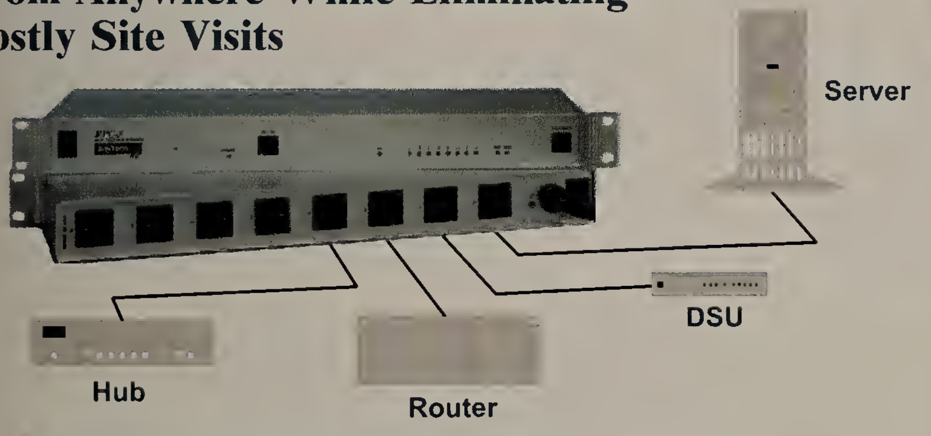

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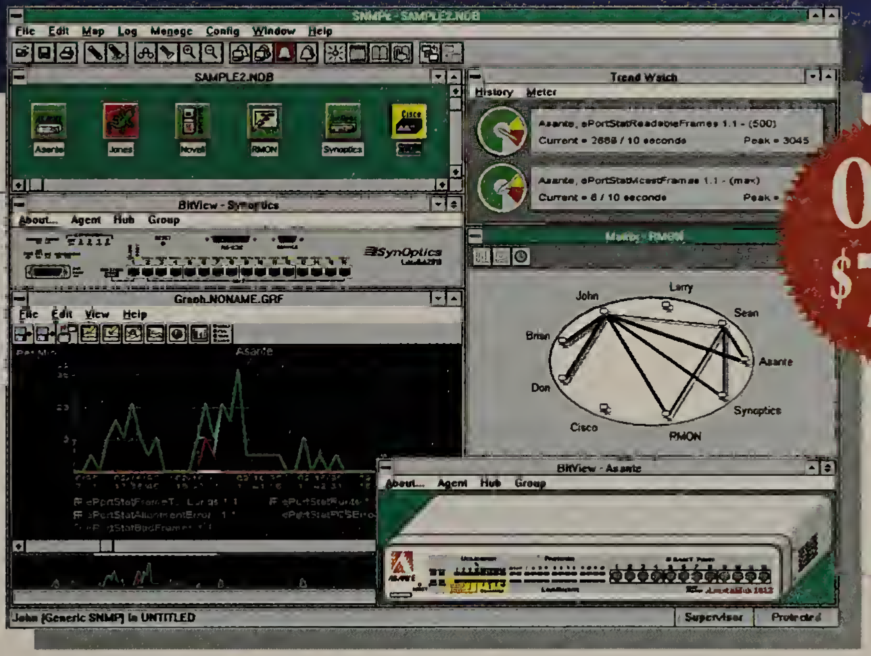

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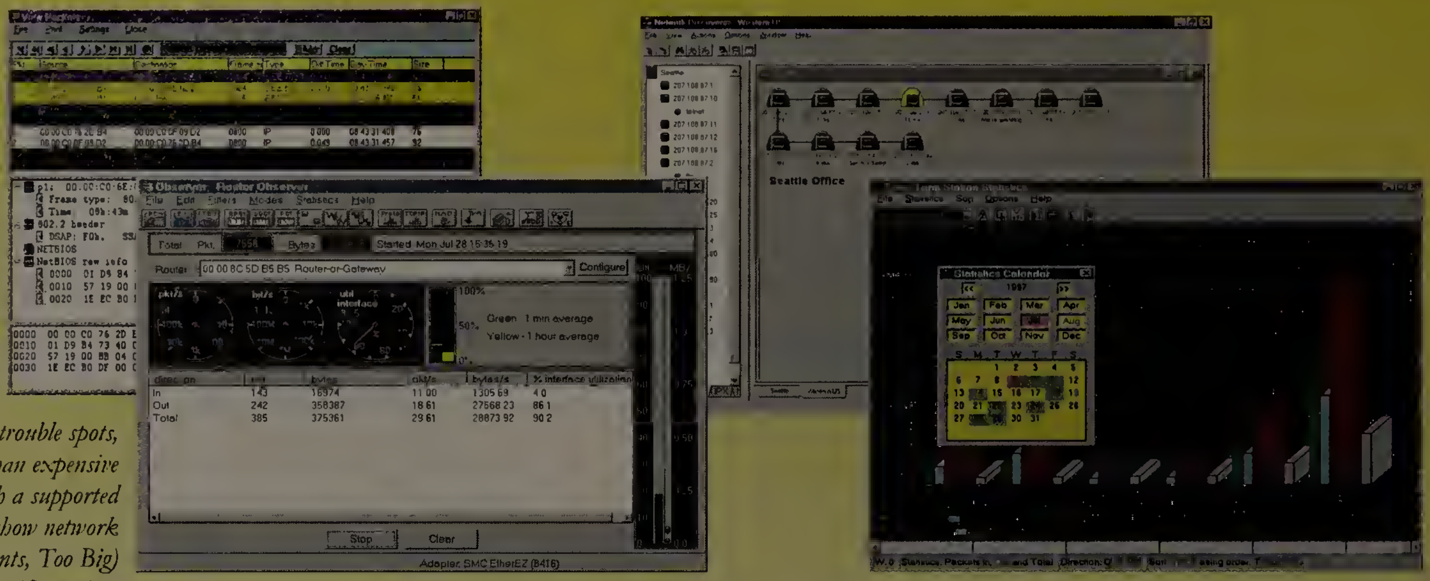

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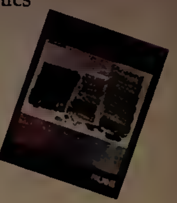

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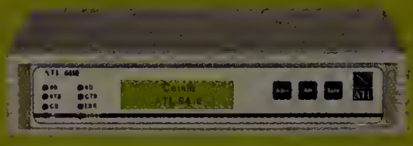

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File  Edit  Traffic  Filters          Statistics  Configure  Help   [▲]   [▼]
           IP:    206.34.72                                     tp -> 1322   175
           IP: 158.219.100   Color | Monochrome                 23 -> http     0
           IP: 158.219.100   Hardware Address | Vendor ID       23 -> http   290
           IP:    206.34.72  Network Address | Hostname         tp -> 1323   175
           IP: 158.219.100   ISO TP Long | Short                22 -> http     0
           IP: 158.219.100
           IP: 158.219.100
           IP: 158.219.100.200 -> 206.34.72.100            1 - Phys      ayer
           802.2: Novell 00a024d3ac79 ->              *    2 - Da         yer
           IP:      206.34.72.1 -> 224.0.0.9*              3 - Ne
           IP:    206.34.72.100 -> 136.179.70.6            4 - T            r
           IP:     136.179.70.6 -> 206.34.72.100           5 - Ses
           802.2: Novell  3Com a53afa ->              *    6 - Pre       n Layer
           IP:      206.34.72.1 -> 224.0.0.9*              7 - Ap         Layer
           802.2: Novell 0020aff50621 ->              *
           ARP: REQ prot: IP   206.34.72.138 ->|          |2
           ARP: REP prot: IP   206.34.72.100 ->|          |2
           IP:    206.34.72.138 -> 206.34.72.100           1               41!
           IP:    206.34.72.100 -> 206.34.72.138                          235!
           IP:    206.34.72.138 -> 206.34.72.10
           IP:    206.34.72.100 -> 206.34.72.1

           IP: 158.219.100.200 -> 206.34.72.
'?' for help      DISPLAY: Network   Rcvd: 3704
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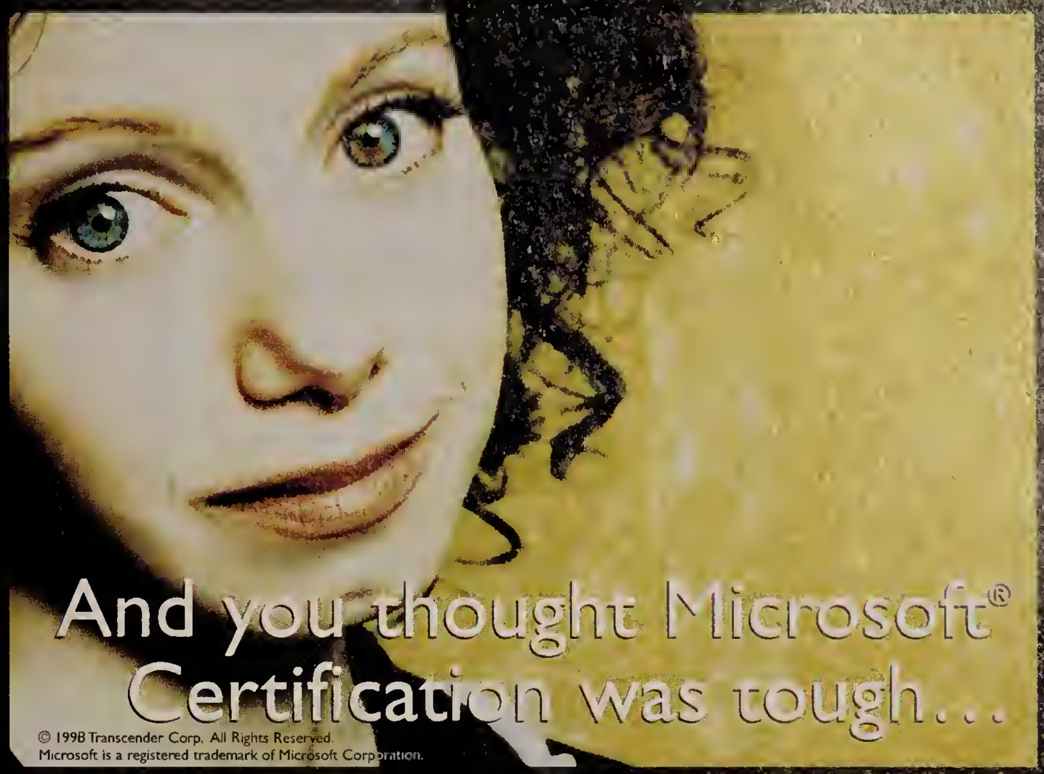
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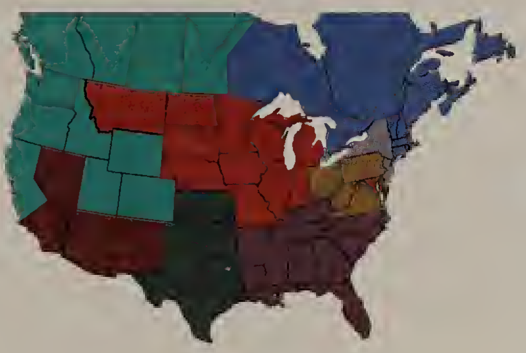

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Microsoft

Continued from page 1

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In addition, if hardware vendors follow the PC design guidelines for this year and next, hardware and software upgrades will be a snap, and PCs will elegantly split displays across as many as nine monitors.

This all sounds like it could cost customers a lot of money, but vendors attending WinHEC 98 promised to keep prices down. A sub-$1,000 PC could have all these features and more, vendors claimed.

One result of this technological smorgasbord would be a vastly larger PC market — one that some observers say could total 500 million units in years to come. And with Microsoft plotting to make each and every one of these systems Internet and LAN ready, there could be a lot of new boxes for IS departments to handle. There also could be a lot of extra computers ready to hit your Web site.

Wintel power

Although neither Microsoft nor its ally Intel Corp. makes PCs, Microsoft said the firms have no intention of turning over the responsibility for setting PC design guidelines to PC makers. After all, Microsoft and Intel's ratcheting up of PC requirements helps Microsoft sell more bloated software and Intel sell faster chips, observers said.

The review process for the PC design guidelines is by invitation only, so hardware designers must be approved by Microsoft or Intel to even participate. The PC makers must follow the guidelines in order to display the Windows logo.

As the PC makers agree to add new technologies, they inevitably will drop older ones. On the way out would be technologies such as the ISA bus, a legacy technology from the original IBM PC AT in the mid-'80s, and older software such as MS-DOS. If some companies have their way, even 16-bit Windows applications will go the way of the Edsel.

Microsoft also is trying to move customers to Windows NT — the last version of old-style Windows will be Windows 98, which the company last week confirmed will ship in June. After Windows 98, Microsoft will go with NT all the way, which means a stunning boost in system requirements.

Microsoft's PC game plan

Computers will be equipped with a host of new features, if Microsoft has its way. These include:

- Digital Video Disc support
- Device Bay for peripherals
- Universal Serial Bus
- 64M bytes of RAM
- TV cable
- Full stereo sound
- Multiple monitors
- Integrated network interface card

So while Microsoft rivals talk up thin clients and small footprints, Microsoft is pushing for standard consumer and corporate PCs as well as laptops to sport a minimum of 64M bytes of RAM. According to Carl Stork, Microsoft general manager of hardware strategy and evangelism, 128M bytes would be better.

In order to make the grade next year, PCs must also have at least a 300-MHz Pentium II class processor with MMX and 256K bytes of Level 2 cache.

Microsoft doesn't see these requirements as a huge problem but is going out of its way to clue in corporations early.

''We need to let corporations know now'' about the 64M-byte RAM recommendation, said Stacey Breyfogle, product manager for desktop operating systems at Microsoft. In fact, Microsoft officials claimed PCs need more hardware so that Microsoft can make its software easier to use.

However, these requirements could slow down the rapid pace of PC price reductions that customers have come to expect, and they provide huge and expensive upgrade headaches for IS. Then again, the requirements could result in companies hanging onto the legacy systems that Microsoft disdains even longer.

At this year's WinHEC 98 conference, Microsoft seemed particularly hot on change.

Maybe this was because of all the well-publicized network computer and Java rhetoric from Oracle Corp. and Sun Microsystems, Inc. Or maybe Microsoft truly believes the PC is getting stale. In any event, Microsoft sought to answer every criticism that Oracle's Larry Ellison and Sun's Scott McNealy have made. Here's a quick rundown of what Microsoft expects to see in PCs:

- Instant and fast networking via built-in LAN client support and 'Net hooks.
- Manageability through the Zero Administration Initiative for Windows and Web-Based Enterprise Management specifications.
- Reduced total cost of ownership through improved software configuration. Microsoft has a utility that will freeze a configuration, dump the configuration into a Cd and allow each desktop to be set up the same way. ■

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Bay plants itself at the network edge

New product strategy stresses peaceful coexistence, not vendor lock-in.

By Jim Duffy
Billerica, Mass.

Bay Networks, Inc. last week unveiled enhancements to its routers that will give users more Internet access options.

The extensions to Bay's Advanced Remote Node (ARN) and Backbone Node (BN) routers are designed to buttress the boxes' capabilities at the edge of the network, where users gain entry to the WAN and service providers extend services to customer premises. Bay's strategy is to work with installed equipment from multiple vendors rather than encourage users to install Bay-only gear.

''They're just not in a strong enough position in terms of products or industry market share where they can get away with [locking customers in],'' said John Morency, principal at Renaissance Worldwide, Inc., a consulting firm in Newton, Mass. ''Cisco [Systems, Inc.] can, Bay can't.''

Bay can, however, attempt to make the best of its position through product upgrades. For the ARN branch router, Bay added a 10/100Base-T autosensing Ethernet port, integrated T-1 and fractional T-1 DSUs/CSUs, an X.25 packet assembler/disassembler (PAD) and a firewall.

The autosensing ports are designed to support high-bandwidth intranet and multimedia applications. The integrated DSUs/CSUs are intended to lower equipment costs by eliminating the need for external DSUs/CSUs. The X.25 PAD supports legacy protocols still being used by industries such as retail. And the firewall is for added security when doing business over the Internet.

Bay's access edge

Enhanced products include:

Advanced Remote Node router

- 10/100Base-T autosensing
- Integrated T-1, fractional T-1 DSUs/CSUs
- X.25 PAD
- BaySecure firewall

Backbone Node router

- DSL service concentration
- Dynamic address learning
- Source address-based routing
- Support for 2,048 permanent virtual circuits

Software enhancements

Additionally, Bay has enhanced the routing software for the ARN and BN. The company's BayRS Version 12.10 software features an embedded Web server and support for the Remote Monitoring 2 Management Information Base.

The ARN with the 10/100Base-T port costs $2,645. The T-1 DSU/CSU modules costs $1,195 each. The X.25 PAD costs $1,500, and the BaySecure firewall costs $1,500. The BN DSL service concentrator software costs $2,800, and BayRS 12.10 is included with the purchase of a Bay router. All enhancements are available now.

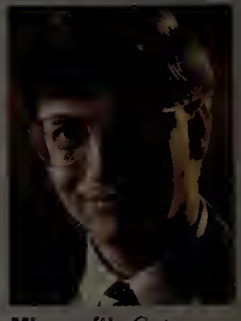
© Bay: (978) 670-8888

Bill Gates, Superstar

The doors opened and dozens of people literally ran into the huge room, each seeking a seat as close to the front as possible.

Was this a Who concert? An appearance by the Pope? Nah. It was just Bill Gates, the richest man in America, giving a speech about the future of the PC.

And those rushing the stage were not kids in concert T-shirts or the Catholic faithful. They were engineers who slave away building PCs, peripherals and cards.


Microsoft's *Gates*

After the crowd was warmed up by the crushing sound of Van Halen, Microsoft Corp. CEO Gates bounded onto the stage wearing a loose red WinHEC 98 shirt. His delivery may have lacked oomph, but the message was gleefully absorbed by more than 1,000 audience members.

Gates, as usual, was excited about the PC market. Unit volumes are up, prices are down, and new uses, such as digital photography, are taking hold. ''The pace is faster than ever, and all this makes the PC a much better tool,'' Gates gushed.

He also was impressed with all the power packed into today's PCs. ''We have some people asking, 'Do we need all that capability?' We need all that power to make the PC a simple device, a natural device to work with,'' Gates argued.

In fact, the overall message at the WinHEC 98 confab was that PCs should be fatter — not thinner — clients. The battle cry was for faster CPUs and more memory, moving to 64M bytes as the norm, and then on to 128M.

Gates also sees new device types. One he is most excited about, some five years out, is a high-resolution tablet. This device would let people do most of their reading on a PC, without going buggy.

The ebullient Gates has one major worry, though — the state of high-speed access for consumers. While some progress has been made by cable modems and digital subscriber line trials, the vast majority of home connections are still a paltry 28.8K bit/sec. Gates believes that the Universal DSL standard will drive consumer demand and create a high-volume market, but that carriers' rollouts will be slowed by government regulation.

—*Doug Barney*

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[illegible]

Novell

Continued from page 1

these developments are key to obliterating NetWare's sorry reputation as an application server — welcome news to third-party developers and users.

"[Being able] to write applications in Java . . . opens up NetWare to developers for the first time," said Tomas Vocetka, general manager of CS Software, Ltd., a maker of network management tools in the Czech Republic.

"Novell is saying they don't care what kind of [Java applications] you put out there, they will deal with it. That looks like a more open approach" than Microsoft Corp.'s, said Kevan Paul, LAN administrator at Intermountain Health Care, Inc.

Speed counts

Novell officials were almost giddy about giving BrainShare '98 attendees tangible evidence of just how fast Java can run on NetWare 5.

The benchmarks conducted by Provo, Utah-based KeyLabs, Inc. clocked the performance of NetWare 5's Java Virtual Machine (JVM) at more than twice the speed of Microsoft's Windows NT 4.0 JVM implementation (see graphic).

Those same tests showed the NetWare 5 JVM outperforming popular Unix-based Java servers even more boldly.

"Now with [proof of] the fastest server JVM, we have the right to stand up and say, 'Start with us!' " Schmidt said.

According Novell Chief Technology Officer Glenn Ricart, Java screams on NetWare 5 because the two "were a match made in technology heaven."

Novell implemented the JVM from Sun as part of NetWare 5's kernel with very little overlap in function, Ricart said. NetWare's strengths are in moving data across the network and controlling that movement through NDS. The JVM provides memory management and protection, threading and byte code interpretation.

But not everyone was bowled over by the KeyLabs numbers.

Microsoft Group Product Manager Charles Fitzgerald said he can point to other industry benchmarks, such as Pendragon Software, Inc.'s CaffeineMark, which show NT 4.0 as the fastest server-side Java platform.

Some users agreed that more proof is necessary from Novell.

"When they actually show [the JVM] to me [in production], I will believe it," said John Bezy, a systems engineer for Advanced Network Technologies, in Omaha, Neb.

Bezy believes that server-side Java applications on NetWare 5 will be limited primarily to system and network management functions — at least until Novell demonstrates that NetWare can handle more innovative applications.

But Dave Clare, Novell's director of product services strategy, said the firm is working hard to recruit heavy-hitting Java developers. For example, he noted that Sanga International, Ltd.'s 16 vertical Java-based applications and Activerse, Inc.'s real-time messaging application were running on NetWare 5 at JavaOne.

Novell's Schmidt said 100 Java applications will be certified on NetWare 5 when the network operating system ships in late summer.

Novell's argument for running Java programs on NetWare will be strengthened by the company's plans to tie such applications into transaction systems.

Novell has given beta sites software internally referred to as the CICS Transaction Link.

This software allows distributed Java-based applications running on NetWare to work with IBM CICS transaction monitoring middleware running on high-end machines. CICS can be used to coordinate interaction between distributed Java and legacy applications components.

Clare said that Novell also is working with several message queuing companies, such as Open Horizons, Inc., of San Francisco, on similar Java links. Such links will enable Java applications to tap into message queue services to ensure that communication between distributed Java components is maintained even when network connections fail. ■

Good marks for NetWare

KeyLabs' Volano benchmark measures the number of Java application messages that can pass through a server per second.

Platform	Java version	Volano benchmark	File/ disk I/O*
NetWare 5 Beta 3 300-MHz Pentium II	JDK 1.1.5	2171	67.8
Windows NT 4.0 300-MHz Pentium II	Microsoft SDK 2.01 with Java 1.1	953	138.1
Windows NT 4.0 300-MHz Pentium II	Sun JDK 1.1.5 with Win32 performance pack	842	147.4
HP-UX 160-MHz PA-RISC	JDK 1.1.4	276	814.7

* Measures the time it takes the server to read and write a 600K-byte file from a Java application to disk.

Novell futures

Novell, Inc. last week used BrainShare '98 to tell users about a smattering of things to come over the next 18 months.

Among the more interesting developments is a 64-bit version of NetWare that Novell is building with Intel Corp. The software will run on high-performance servers equipped with the yet-to-be-shipped Intel Merced chip. Code-named Modesto, after a California town bordering Merced, this follow-on to NetWare 5.0 will ship next year.

Novell officials offered few details about Modesto, other than that they think it will be a formidable platform for intensive data processing, data warehousing and line-of-business production applications. Because customers will not need this 64-bit support across all Novell servers, officials said Modesto will be backward-compatible with NetWare 3.X, 4.X and 5.X machines.

Other tidbits thrown out to attendees included:

- A promise to ship a version of Novell Directory Services (NDS) that runs natively on Microsoft Corp.'s Windows NT by year-end. NDS for NT 1.0 currently allows users to control access to NT services by redirecting security database information into NDS. This setup requires at least one NetWare server on the network. The enhanced version will run on top of NT Server and allow an administrator to manage an NT-only network via NDS.
- An announcement that NetWare will ship with a free five-user license for Oracle Corp.'s Oracle8 database. Beginning in June, Novell customers will get Oracle8 with every new copy of NetWare 4.11. The database software will also ship with NetWare 5, Novell's NOS upgrade that is due to hit the streets late this summer.
- A disclosure that Novell is working on several OEM deals with Compaq Computer Corp., under which the hardware vendor would license Novell software and package it with Compaq hardware. For example, Compaq may offer an Internet caching server based on Novell's BorderManager FastCache.

— Christine Burns

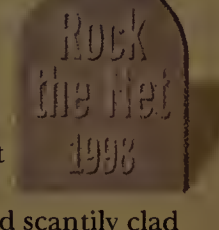
Reporter's notebook: Valentines to IP and Schmidt's imprint

Here is a sampling of the sights and sounds of note from BrainShare '98:

IP lovers

Novell, Inc. is convinced that the way to a network administrator's heart is not through food or flowers, but rather IP. And the company may be on to something, too. Witness this customer quote from the cover of Monday's conference daily: "I've waited for years for pure IP . . . in fact, when I saw that first NCP packet directly over VDP, I nearly cried." Makes you weak in the knees, no?

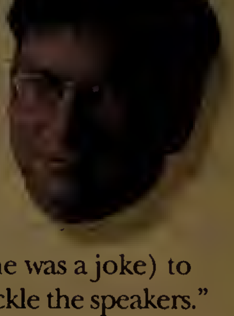
Rock the Net is dead



There was no mistaking the fact that this year's BrainShare carried the imprint of Novell CEO Eric Schmidt, who had just been hired this time last year. Gone were the pyrotechnics and scantily clad dancing girls that made such an impression — mostly a bad one — at BrainShare '97. Gone, too, was Novell's "Rock The Net" slogan, which has been replaced with "Novell is the Network." Call it more businesslike, call it boring, but it's definitely more Eric Schmidt.

Home is where the 'Net is

The new boss has his geek bona fides in order, too. A series of "executive briefs" that flashed on-screen before Schmidt's keynote address informed attendees that: "Eric Schmidt's home Internet connection is a 10M bit/sec radio link."



Hecklers not welcome

Then there was this admonition (which we presume was a joke) to the audience: "Please do not heckle the speakers." Maybe the warning was included in the program before Novell's recent financial upswing.

— Paul McNamara

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Customers embrace Novell's GroupWise 5.5 beta release

By Paul McNamara

Salt Lake City

Novell, Inc. last week reaffirmed its commitment to GroupWise as a strategic product, while also releasing the first detailed description and public beta code of an upgrade scheduled to ship later this year.

Version 5.5 of the groupware/messaging product, which was previewed at Novell's BrainShare '98 conference here, will feature the following:

- Improved document management capabilities that allow documents to be "echoed" from a GroupWise library to a user's hard drive, giving even remote users full access to those libraries.
- The ability to split and merge libraries, as well as move and change document properties in batches.
- Full-text indexing of all e-mail, documents, tasks and schedule entries.

In addition, Novell is building WebPublisher, the company's server-based technology for publishing documents directly to an intranet or the Internet, into GroupWise 5.5. WebPublisher has been an add-on.

Novell also has built new viewing and printing options into GroupWise 5.5's calendaring and scheduling features. Users will be able to see colleagues' calendars at a glance and ascertain whether the colleagues are free.

On the Internet protocol front, GroupWise 5.5 will add support for Secure Multipurpose Internet Mail Extensions and Pretty Good Privacy, as well as the vCard electronic business card.

GroupWise may still trail Lotus Development Corp.'s Notes and Microsoft Corp.'s Exchange in sales, according to industry analysts, but GroupWise users interviewed here remain fiercely loyal. And show attendees had high praise for Novell's new GroupWise features.

"It's quite a significant upgrade from [GroupWise] 5.2," said Cobus Burgers, managing director of PC Line, a systems integrator in South Africa. "A lot of features that we have expected for a long time are now available, especially on the document management side."

Virtually every customer interviewed placed the calendar view and personal information management enhancements at the top of their lists of fulfilled wishes.

"They've modified the calendar a lot to give you different views that you don't have now in [GroupWise 5.2]," said Todd Farrow, network manager at Sumaria Systems, Inc., in Fairborn, Ohio. "[Users] like the month-view calendar."

At one conference session, attendees were shown how GroupWise 5.5 will allow "intelligent content" such as JavaScript, Visual Basic Script and Java applets to be embedded into messages. For example, this capability would allow a company to e-mail a list of next year's holidays to all employees, who would then press an HTML-based button inside the message to input those date entries into their personal calendars.

Even with all the additions, some customers still see room for improvement.

"An area where I would like to see some more benefits is in shared folders," said Nathan Golden, a senior systems engineer at Sarcom Professional Services, Inc., in Columbus, Ohio.

GroupWise 5.5, which runs on NetWare, Windows NT and Unix, "will ship before the summer is out," said Stewart Nelson, vice president of the Novell Products Group. ■

1998 Seminar Dates and Locations:

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April 14	Philadelphia, PA
April 29	Boston, MA
April 30	New York, NY
May 20	Los Angeles, CA
May 21	San Francisco, CA
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In such enterprises, over 70% of the vital corporate data resides within the traditional data center as opposed to on the web servers hosting their nascent intranets. The data center systems, though increasingly supporting and integrating TCP/IP, will be running mission-critical SNA applications well past the year 2000. Enterprises that currently have data centers have no choice but to somehow integrate their new intranets and Internet interfaces with the SNA-centric systems, applications, files and databases that reside within the data center.

Taught by SNA-Internet Integration expert Anura Gurugé, *Integrating Intranets and Data Centers* will help network managers, planners/designers, data center managers, systems programmers and database managers navigate the intricate issues surrounding the integration of data centers with intranets and the Internet.

If your organization has mainframes or AS/400s and are in process of implementing or have already implemented an intranet or an Internet gateway to your information repositories — this seminar is for you. *Integrating Intranets and Data Centers* will provide you with incisive, credible and comprehensive information so you can identify, evaluate and implement intranet-to-data center integration solutions in your organization.

6 Key Benefits of Attending:

1. Learn about available technologies for integrating data centers with intranets and the Internet including: browser-based access to SNA; tn3270E/tn5250; Data Link Switching (DLSw); application specific gateways (e.g., CICS Internet Gateway); programmatic access to applications and databases, and middleware.
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Backspin

Digital media: New ways to cope with copying

As I noted in my column last week, publishers of digital media have to learn to accept that their products will be illegally copied. It is simply just too easy and tempting to copy music, software, documents, etc.

But it's tough for any vendor with a traditional outlook on sales to accept the idea that some people will get their products for free.

Mark Gibbs

Of course, if you're a shareware vendor, you understand this concept as a basic tenet of business. You know that there's a valuable trade-off between unlicensed copies and market exposure: The more people who see your product, the more people who might pay for it. But this strategy doesn't work for all vendors.

In an effort to constrain unauthorized duplication, some vendors use complex authorization schemes, but these are more of a nuisance than a real protection. I wonder how long it will be until some misguided vendor creates software that must authenticate itself on a weekly or even daily basis across the Internet.

A new and unusual approach may be to offer a product with a finite profit expectation. Once that is reached, the product would be free to all.

Chadwyck-Healey, a database publisher, is using this strategy with its ArchivesUSA database. This is a searchable Web index of documents, manuscripts and other artifacts found in 4,400 libraries and 100,000 special collections in the U.S. (I read about this in the excellent Edupage newsletter at www.educom.edu).

If Chadwyck-Healey can raise $400,000 through library donations by the end of April, the company has promised to make the database free to users in the U.S. and Canada. What an interesting idea!

Of course this strategy really only works for products in which the intellectual investment isn't high, such as a database of existing data, as in this case, or when the product has a definite life span. But even products that require high intellectual investment, such as software, might be treated this way if they have planned obsolescence built in.

Interestingly, given the frenetic pace of computer product development, vendors don't have to plan planned obsolescence — it occurs naturally as part of the iteration of the product.

While many bemoan the rapid product cycles we see, the problem is that for commercial software in the Internet market, that's life — it's the only way things can operate. The dynamics of the marketplace ensure that it just isn't possible to have the slow product cycles that existed in the '80s, for example, when major releases appeared annually.

Curiously, this rapid cycling, which introduces features and facilities and improves products, is in no way counter to our desires and expectations. It is an enculturated attitude that we don't want to wait.

The title of the 1988 song "I Want It All Now" by The Tubes (from the album "Remote Control") summed up a crucial ethic of the computer age. We do want it now. Hell, we want it as now as soon as possible.

Found a bug? We expect the vendor to fix it immediately. The vendor discusses a rework or revision? We can't wait to get our hands on it. Hence, the beta de jour model that everyone has adopted.

So in the market for digital media, in which I include software, vendors need to recognize that the profitability of their product lines is limited and they have to give away access to their products, voluntarily or involuntarily, to build market.

But the question is, how much do they have to give away? The answer: enough to get their audience hooked on their products.

Next week — addicted to your apps.

A copy of your thoughts to nwcolumn@gibbs.com or dupe it on (800) 622-1108, Ext. 7504.

'NET BUZZ

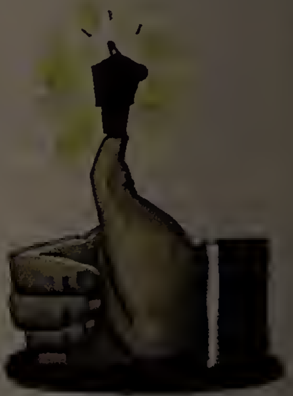
The latest on the Internet/Intranet industry

By Chris Nerney

AND THE WINNER IS . . . ME Last September, Internet fax start-up **NetCentric Corp.** named network industry heavyweight **Paul Severino** as chairman and acting CEO amid rumors that the company was in trouble.

In addition to turning around NetCentric, Severino was charged with finding a replacement for outgoing CEO and founder **Sean O'Sullivan,** who sought a break from the high-tech trenches.

Now more than six months later, Severino and the NetCentric board of directors have chosen a permanent CEO: A network industry veteran named Paul Severino.



In some ways, Severino is as surprised by the choice as anybody.

"I told a lot of people I wasn't going to get involved in another start-up," he says.

But Severino and other NetCentric board members liked the way things went during the past half-year. Besides, he says, "it's hard to find people who have gone out and built a business."

Severino's last run around the start-up track was auspicious, to say the least. In 1986 he formed router vendor **Wellfleet Communications, Inc.** with three employees. Eight years later Severino guided Wellfleet through a merger with hub maker **SynOptics Communications, Inc.,** creating **Bay Networks, Inc.,** then a billion-dollar hardware company with 5,000 employees.

He hopes to achieve similar success with Cambridge, Mass.-based NetCentric, founded in January 1995.

Severino acknowledges NetCentric was floundering last fall.

"The company was doing a lot of different things, but it wasn't making the progress it needed to make," he says. "We had to get focused and put all our wood behind one arrowhead."

Ditching plans for such things as software distribution services and file server software, Severino has focused NetCentric on selling its FaxStorm Internet faxing products to Internet service providers and carriers.

Now, he says, "we've got revenues, we've got customers, we've got installations."

The company recently closed a deal with global telco giant **GTE,** which earlier this month said it would use FaxStorm to offer its customers Internet fax services. Other customer announcements are due in the second quarter.

Severino, though, already has bigger plans.

"Today, you see NetCentric and what you see is Internet fax," he says. "In reality we are in the center of the IP telephony market. Our strategy is to provide products to our customers so they can offer IP telephony services."

IT ONLY HURTS A LITLE Back in 1995, the founder of a transaction processing network software start-up in Lowell, Mass., thought he had come up with a dandy name for his new enterprise: **LitleNet LLC.**

While the name certainly worked for the founder, **Tom Litle,** it left the rest of the world somewhat in the dark about what the company offers.

Litle and other executives at the firm have decided to clarify matters by renaming the company **OrderTrust LLC,** to better reflect its core business — order processing services for electronic sales.

"We wanted to make sure people understood what we do," says Litle, who denies feeling any pangs of regret over sacrificing his name.

Hey, we're willing to take him at his word, though we could have sworn he looked a tad wistful during a recent interview.

OrderTrust offers a back-end order processing network to commerce service providers and online merchants. The company has locked up deals to provide services for the **SkyMall** shopping catalog's Web site and **America Online's** classified advertising service, among others.

Litle, now president of the company if not its namesake, says OrderTrust will be rolling out three different service packages in the next quarter. They will range from basic order processing to credit card screening and tax, shipping and handling calculations.

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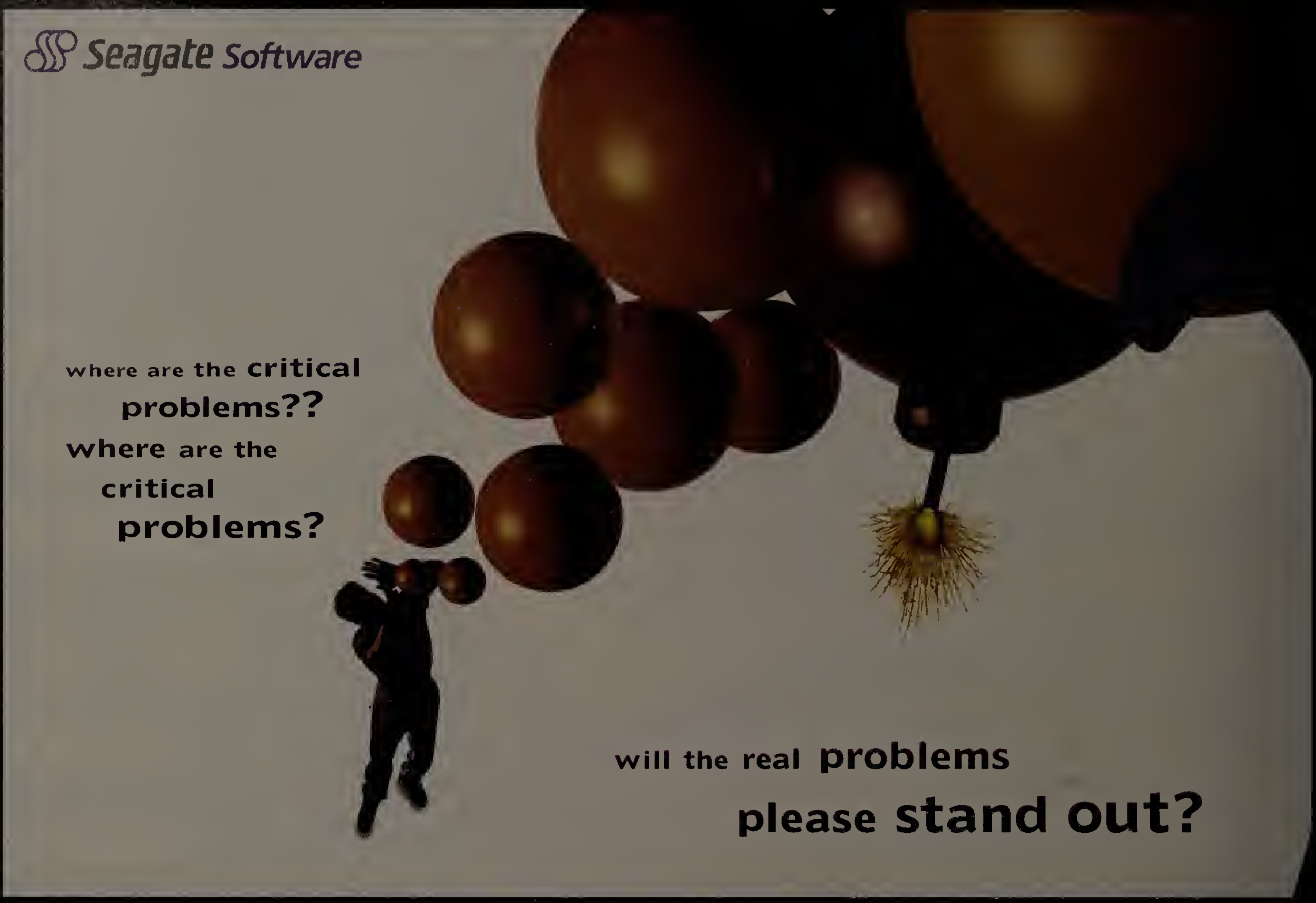
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